TOA

OPERATING INSTRUCTIONS

9000 SERIES AMPLIFIERS

M-9000
A-9060DH
A-9120DH

> This manual is intended for those who use the 9000 Series Amplifier in the Matrix mode.
> For use in the Mixer mode, please read the separate instruction manual for the Mixer mode.

Thank you for purchasing TOA's 9000 series Amplifier.
Please carefully follow the instructions in this manual to ensure long, trouble-free use of your equipment.

TOA Corporation

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1. IMPORTANT SAFETY INSTRUCTIONS

• Read these instructions.

• Keep these instructions.

• Heed all warnings.

• Follow all instructions.

• Do not use this apparatus near water.

• Clean only with dry cloth.

• Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

• Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

• Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

• Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

• Only use attachments/accessories specified by the manufacturer.

• Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

• Unplug this apparatus during lightning storms or when unused for long periods of time.

• Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

FCC REQUIREMENTS

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- • Reorient or relocate the receiving antenna.
- • Increase the separation between the equipment and receiver.
- • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- • Consult the dealer or an experienced radio/TV technician for help.

2. SAFETY PRECAUTIONS

• Before installation or use, be sure to carefully read all the instructions in this section for correct and safe operation.

• Be sure to follow all the precautionary instructions in this section, which contain important warnings and/or cautions regarding safety.

• After reading, keep this manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety hazards.

⚠ The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operation and maintenance (servicing) instruction in the literature accompanying the appliance.

⚠ **WARNING**   Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.

When Installing the Unit

• Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.

• Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.

• Do not cut, kink, otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects -- including the unit itself -- on the power cord, as doing so may result in fire or electric shock.

• Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down and causing personal injury and/or property damage.

• External wiring connected to the terminals marked with ⚡ requires installation by an instructed person.

• The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

• The socket-outlet shall be installed near the equipment and the plug shall be easily accessible.

• Use the supplied rack mounting bracket when mounting the unit in an equipment rack. Remove four M4 x 8 screws on both sides of the unit, and mount the bracket there using the supplied M4 x 16 screws instead.

When the Unit is in Use

• Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest TOA dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.

  · If you detect smoke or a strange smell coming from the unit
  · If water or any metallic object gets into the unit
  · If the unit falls, or the unit case breaks
  · If the power supply cord is damaged (exposure of the core, disconnection, etc.)
  · If it is malfunctioning (no tone sounds.)

• To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest TOA dealer.

• Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.

When Installing the Unit

• Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.

• When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.

• Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.

• Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.

• To avoid electric shocks, be sure to switch off the unit's power when connecting speakers.

• Be sure to follow the instructions below when rack-mounting the unit. Failure to do so may cause a fire or personal injury.

　· Install the equipment rack on a stable, hard floor. Fix it with anchor bolts or take other arrangements to prevent it from falling down.
　· When connecting the unit's power cord to an AC outlet, use the AC outlet with current capacity allowable to the unit.

• Keep the 9000 series amplifiers over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.

Over 10 cm

Over 10 cm　　　Over 10 cm
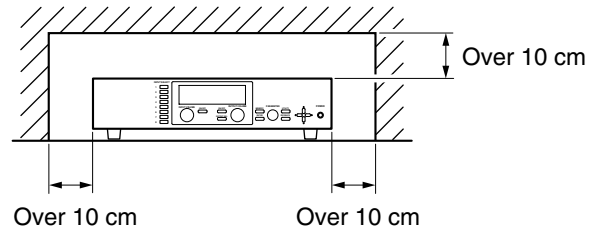
When the Unit is in Use

• Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.

• Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

An all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.

⚡ The lighting flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

⚠ **ATTENTION**

L'appareil ne doit pas être exposé aux éclaboussures ou écoulements et tous objets remplis de liquide, tels que vases, ne doivent pas être sur l'appareil.

3. GENERAL DESCRIPTION

TOA's M-9000 Matrix Mixer is designed to be used in conjunction with optional modules and can be configured for up to 8 inputs and 8 outputs. Usable modules include 4 types of 9000 series plug-in modules, D-001T (for 2 channels of input), T-001T (for output expansion), C-001T (for remote control), and ZP-001T (for zone paging), as well as 900 series input modules. The most appropriate modules can be selected depending on applications.

By changing operation mode, the M-9000 Mixer can be used either as a matrix system suited to BGM or paging broadcasts, or as a mixer that is appropriate for speech or sound reinforcement applications. It is equipped with signal processing and control functions, permitting all parameters to be set at the mixer. Further, settings data can be stored inside the mixer and called up using the keys on the front panel.

The 9000 Series A-9060DH and A-9120DH Amplifiers feature the M-9000's matrix mixer function and come with two 60 W and two 120 W power amplifiers, respectively. Both amplifiers can individually perform multi-channel broadcasts.

4. FEATURES

• Either matrix or mixer mode can be selected depending on application for optimum operation.

• Matrix mode is suitable for BGM broadcasts or paging to zoned areas.

• Mixer mode is suitable for speech or sound reinforcement in such applications as hotel meeting rooms, churches or conference rooms.

• Eight module slots enable audio input and output configuration ranging from 1 input and 2 outputs to 8 inputs and 8 outputs.

• All settings can be performed at the unit using the built-in vacuum fluorescent display (VFD), setting keys and Parameter setting knob on the front panel.

• Up to 32 settings can be stored as Event memory (in matrix mode) or as Scene memory (in mixer mode), which can be recalled by the unit or external connected equipment.

• An RS-232C port permits remote control of the unit using an AMX[1] or Crestron[2] controller, or similar external equipment.

• A key lock function prevents accidental changes of front panel key or knob operation.

• Volume adjustment, paging initiation, and BGM program selection can be easily remote-controlled. The optional C-001T module permits the number of control inputs and outputs to be increased.

• Paging calls can be performed by a PABX (extension telephone) with the use of the optional ZP-001T module.

• A ducker function[3] permits paging calls to be made without interrupting BGM broadcasts when in matrix mode.

• Because an auto-mixing function (ducker function[3] and NOM attenuation function[4]) is available when in mixer mode, the output gain can be automatically adjusted.

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[1] AMX is a trademark of AMX Corporation.

[2] Crestron is a trademark of Crestron Electronics, Inc.

[3] The Ducker function automatically attenuates input signals with lower priority when two or more audio signals are simultaneously received.

[4] The NOM (Number of Open Microphones) attenuation function automatically adjusts the output channel gain depending on the number of open microphones.

5. DESCRIPTION OF MATRIX MODE

Two operation modes are made available to the unit: Matrix mode and Mixer mode.
Be sure to select the matrix mode by the Mode switch on the rear panel before using the unit.
(The mode switch is factory-preset to the matrix mode.)

Mode switch
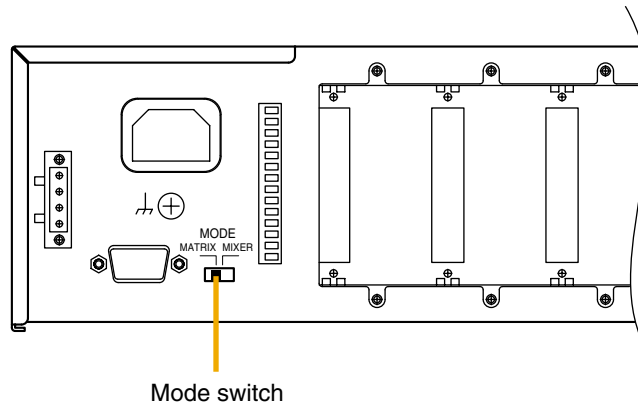
Important

Be sure to disconnect the power supply plug from the AC outlet when changing the mode.
Since the changes in mode will erase all setting contents, download the set files that need to be stored using the supplied PC software.

> This manual describes the instructions on the unit set for the Matrix mode. When you use the unit in the Mixer mode, please read the separate instruction manual for the mixer mode.

5.1. General Description

Use the matrix mode when broadcasting BGM or paging calls to zoned areas in such facilities as civic centers, universities, schools, restaurants, bars, and cruise ships.
Input signals are basically not mixed but distributed in the matrix mode. Multiple audio input signals can be simultaneously routed to multiple outputs and in addition, paging calls assigned different priority levels can be initiated during BGM broadcast to each zone.
The ducker function (refer to) also allows paging calls to be made without interrupting BGM broadcasts to each zone.
A maximum of 32 settings related to broadcasts, such as broadcast sound source input channels, interrupt broadcast output channels, BGM source input channels, and broadcast start methods, can be stored as Event memory.

[Application example for a civic center]

```
   CD                Microphone            Telephone

   ┌──────────────────────────────────────────────┐
   │            9000 series system                 │
   └──────────────────────────────────────────────┘

  Room 1      Room 1      Room 3    Entrance hall

      1F corridors   2F corridors   Rest rooms
```
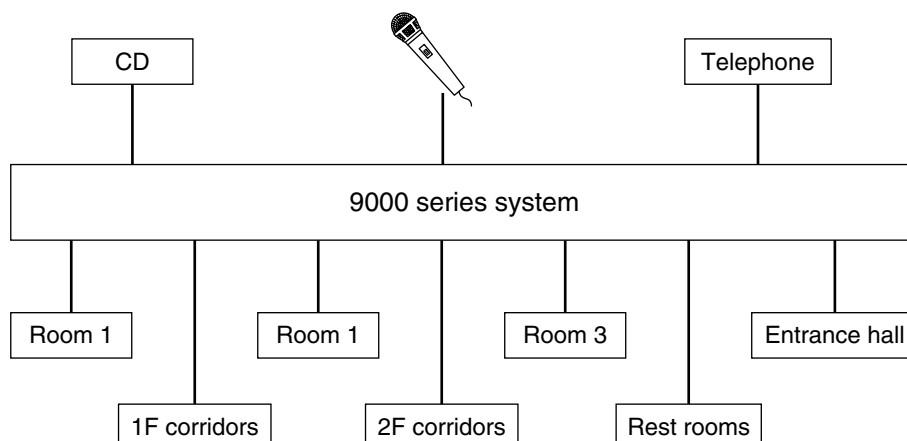
5.2. Glossary

• **Ducker function**

The Ducker function automatically attenuates input signals with lower priority when two or more audio signals are simultaneously received. This function cannot be used if any of such received inputs is not set for the Ducker function.

• **VOX (Voice Operated Exchange) function   (D-001T only)**

This function activates the set Event when an audio signal is input. No Event is activated when no input signal exists. If the audio signal drops below a preset level after the VOX function begins operation (i.e. after an audio signal is fed into the module), the set Event is terminated after approximately 5 seconds.

• **Event**

An "Event" is the unit that defines broadcast pattern and up to 32 Events can be stored.

• **Event classification**

[ROUTE]

This setting defines which audio input signal is transmitted to which audio output. Multiple outputs can be selected. Input channels set to priority levels 1 – 7 are for priority broadcasts, while the input channel set to priority level 8 is for BGM. Set Trigger to "None," "VOX" (D-001T only) or "Control Input" (1 – 12). Selecting Control Input for Trigger causes the BGM to be activated by pulse trigger, and priority broadcasts to be operated by level trigger. It is possible to synchronize control inputs and control outputs, with output being produced as long as the Event is activated.

[BASE]

In this setting, multiple BGM Events are combined into one Base pattern so that they are simultaneously activated by means of a single activation signal. To use this function, BGM Events (signal routing from input to output) must be preset in the Route settings.
Up to 4 Route-set BGM Events can be combined into one Base pattern.

> Example: Combining Route-set BGM Events Nos. 1, 2 and 3 into one Base pattern, and assigning the Base pattern to Event No. 4

When BGM Events to which the same output channel is assigned are individually activated, their broadcast zone depends on the priority setting (first-in-first-out priority, last-in-first-out priority, or mixing) performed in advance for the Events.
Though BGM Events combined in a BASE pattern are activated simultaneously, the BGM Event with the smallest input channel number is considered to have been selected first.

> Example: Assigning the following two BGM Events to Event No. 3 as Base pattern.
>
>> Event 1 = Input 1 → Outputs 1 and 2
>> Event 2 = Input 2 → Outputs 2 and 3
>
>> In this example, Output 2 is duplicated. However, if system priority is set for "first-in-first-out" priority, BGM is broadcast to the following zones because Input 1 has a priority:
>
>> Event 1 = Input 1 → Outputs 1 and 2
>> Event 2 = Input 2 → Output 3

For Trigger, select "None" or "Control Input" (1 – 12). In Base settings, VOX cannot be selected for Trigger nor can control outputs be synchronized with control inputs. Base settings are not required when only one BGM program has been set in Route.

• **BGM END**

Defines the method of stopping BGM broadcasts. Only "Control Input" (1 – 12) can be selected for Trigger.
All current BGM broadcasts are stopped. Control outputs cannot be synchronized with control inputs.
To stop the specified BGM Event set in Route (including the case that the only one Base pattern is broadcast) when two or more BGM Events are activated, turn off the corresponding input channel at the unit's front panel.

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6. INSTALLATION PRECAUTIONS

• Keep the A-9060DH and A-9120DH amplifiers over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.
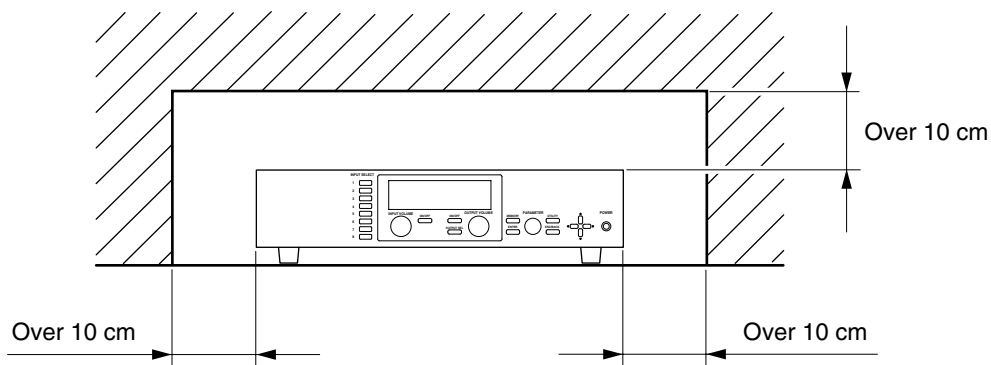
7. HANDLING PRECAUTIONS

• The supplied power supply cord is designed for exclusive use with this unit. Never use it with other equipment.

• Use the unit in locations where the temperature is between –10 and +40 °C (no condensation should be formed), and the humidity is less than 80%.

• The unit is a precision audio component. To prevent failure, avoid locations where it may be exposed to strong shocks or vibrations.

• To clean, be sure to first disconnect the power supply plug from the AC outlet, then wipe with a dry cloth. When extremely dirty, use a soft cloth dampened in neutral detergent. Never use benzene, thinner or chemically-treated towels, which may damage the unit's finish.

8. NOMENCLATURE AND FUNCTIONS

8.1. M-9000, A-9060DH, A-9120DH

[Front]

This figure represents the M-9000.
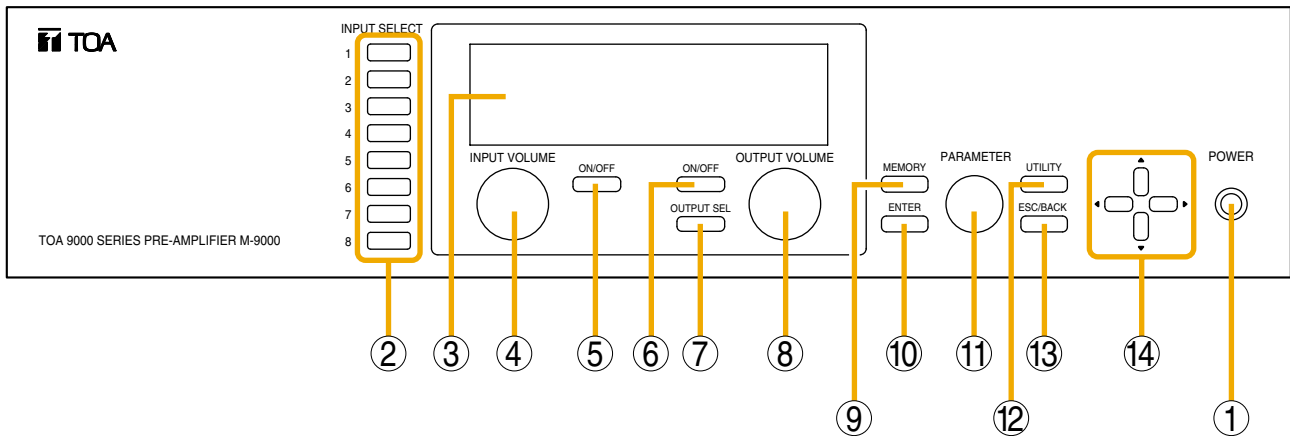
1. Power switch and Power indicator
Press this switch to turn on the power. The power indicator lights. To turn off the power, hold down the switch for at least 0.5 second.

Note
The power switch is a soft-switch, so the internal microcomputer is still operating even when the power switch is set to OFF.

2. Input channel selection keys
Select the input channel for which the volume is adjusted or parameter is set.
Pressing the key causes the corresponding red channel indicator to light on the vacuum fluorescent display (VFD).

3. Vacuum fluorescent display (VFD)
Displays the setting screen, input and output selection status, channel ON/OFF status, input and output level meter indication, and fader position.
(Refer to p. 13 "VFD on-screen indications.")

4. Input volume control
Adjusts the gain of the input channel selected with the input channel selection key (2).

5. Input channel ON/OFF key
Turns on or off the channel selected with the input channel selection key (2).

6. Output channel ON/OFF key
Turns on or off the channel selected with the output channel selection key (7).

7. Output channel selection key
Selects the output channel for which the volume is adjusted or parameter is set. The output channel indicators on the VFD light in sequence each time the key is pressed.

8. Output volume control
Adjusts the gain of the output channel selected with the output channel selection key (7).

9. Memory key
Used to save the setting contents in each setting mode, or to delete on-screen indications to enter each setting mode.

10. Enter key
Press this key when such indications as "OK?" are displayed.

11. Parameter setting knob
Rotate this knob to select the setting item or setting contents.

12. Utility menu key
Holding down this key for 2 seconds or more when in normal operation mode switches the display to the setting screen.

13. Escape/Back key
Used to revert back to a previous screen when advanced with the Enter key during setting operation.

14. Screen shift keys [▲ ▼ ◀ ▶]
Move the setting screen or setting item.

[VFD on-screen indications]
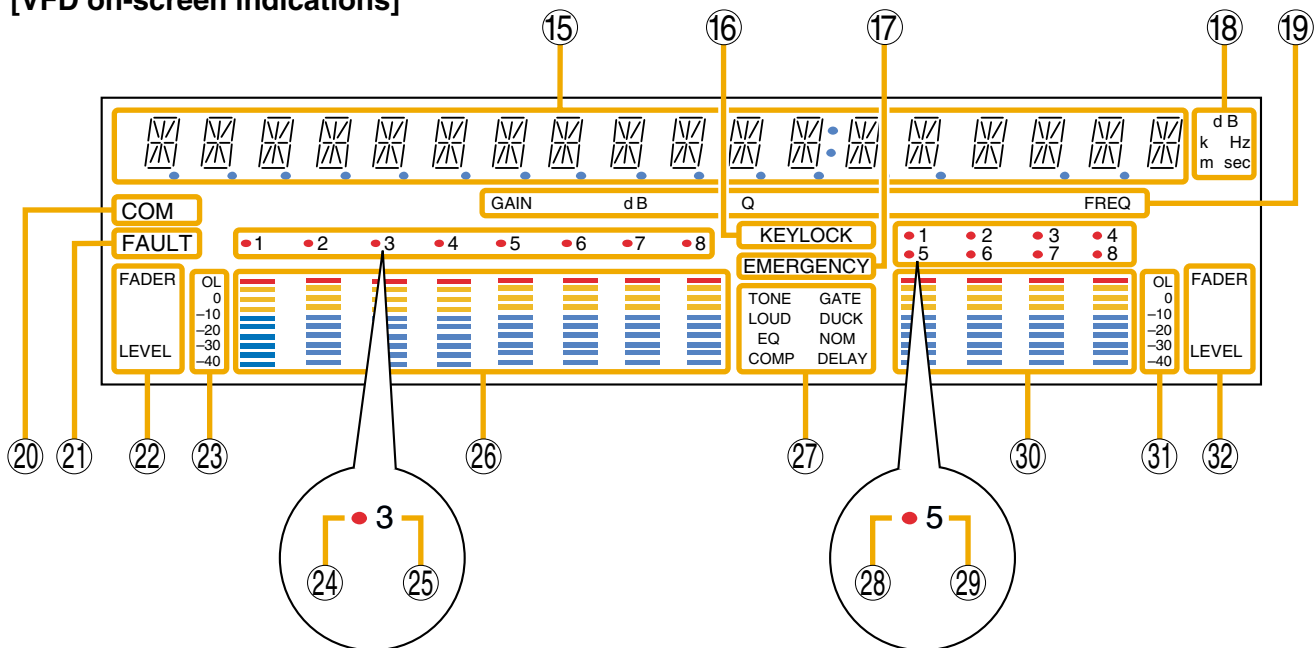
15. 14-Segment,18-digit alphanumeric display
Displays the corresponding setting screen or data when each function key is pressed.
Parameters being edited flash.

16. Keylock indicator
Lights when the key lock function is enabled, and flashes while the key lock function is being edited.

17. Emergency indicator
Lights when the control input set for "Emergency mute" becomes active.

18. Unit indicator
Displays the unit of each parameter when it is set.

19. GAIN, dB, Q, FREQ indicators
Lights when the equalizer is adjusted.

20. COM indicator
Remains lit during communications via the RS-232C interface.

21. Fault indicator
Lights when the unit's failure or other abnormal conditions are detected.
(Refer to p. 83 "ERROR INDICATIONS.")

22. Input meter status indicator
Indicates which the input level (LEVEL) or input fader position (FADER) is being displayed on the input meter (26).
Note
Input level is displayed only when the D-001T module is used.

23. Input level indication
Scale of levels (in dB) for the input meter.

24. Input channel selection indicator (red dot)
Lights when the corresponding input channel is selected, and flashes while parameters are being edited.

25. Input channel ON/OFF indicator (channel number)
The indicators for all channels normally light regardless of whether or not the channels can be selected by the input channel selection keys (2) or can be used (p. 85 "Remarks"), while they flash when turned off by the input channel ON/OFF key (5).

26. Input meter
Indicates the signal level or input fader position of each input channel.
Which the meter is indicating is displayed on the input meter status indicator (22).
Notes
• The input meter is kept on even for the channel that is turned off or muted.
• Input level is displayed only when the D-001T module is used.

27. Effect indicator
Lights when effect is on, and flashes while the parameters are being edited.

28. Output channel selection indicator (red dot)
Lights when the corresponding output channel is selected, and flashes while parameters are being edited.

29. Output channel ON/OFF indicator (channel number)
Lights when the corresponding output is on (i.e. in operation mode), and flashes when off.
The number of channels of which indicators light depends on the modules used.

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30. Output meter

Indicates the signal level or output fader position of each output channel. Which the meter is indicating is displayed on the output meter status indicator (32).

Notes

• When the output channel 1 or 2 corresponding to the A-9060DH's or A-912DH's preamplifier output is turned off or muted, the output channel's meter becomes off.

• Even when the M-9000's preamplifier output channel or the T-001T's output channel is turned off or muted, any output channel's meter is kept on.

31. Output level indication

Scale of levels (in dB) for the output meter.

32. Output meter status indicator

Indicates which the output level (LEVEL) or output fader position (FADER) is being displayed on the output meter (30).

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[Changing the indicated channels on the LEVEL output meter]

The output meter indicates the signal levels of only a set of 4 channels: CH 1 – 4 (factory-preset) or CH 5 – 8.
Pressing the Up shift key alternately switches the level indication between CH 1 – 4 and CH 5 – 8.
The LEVEL indicator of the output meter status indicator flashes while the CH 5 – 8 are indicated, and stays lit while the CH 1 – 4 are indicated.
In the same manner, the output meter also changes in the Fader indication.

Output meter   Output meter status indicator
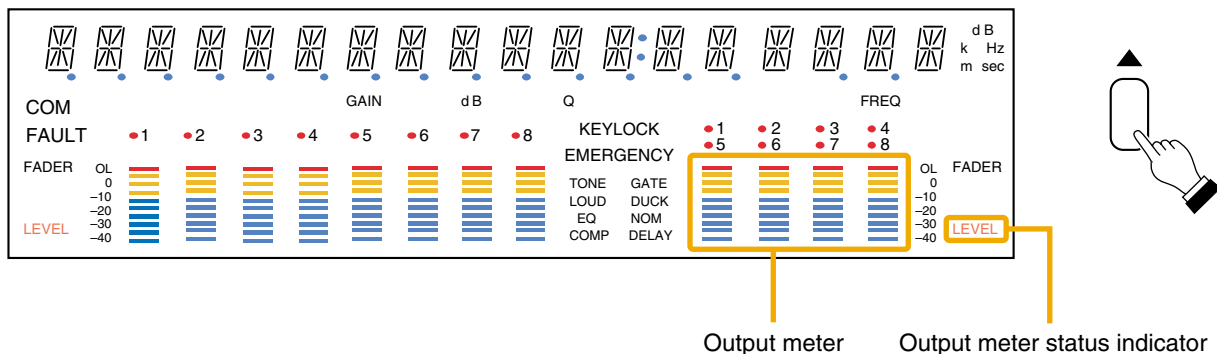
[Changing the input and output meter display status]

Pressing the Down shift key alternately switches the input and output meter display status between the signal level and the fader position.
The LEVEL indicators on both input and output meters light when the signal levels are indicated, while the FADER indicators light when the fader positions are indicated.

Input meter status indicator   Output meter status indicator
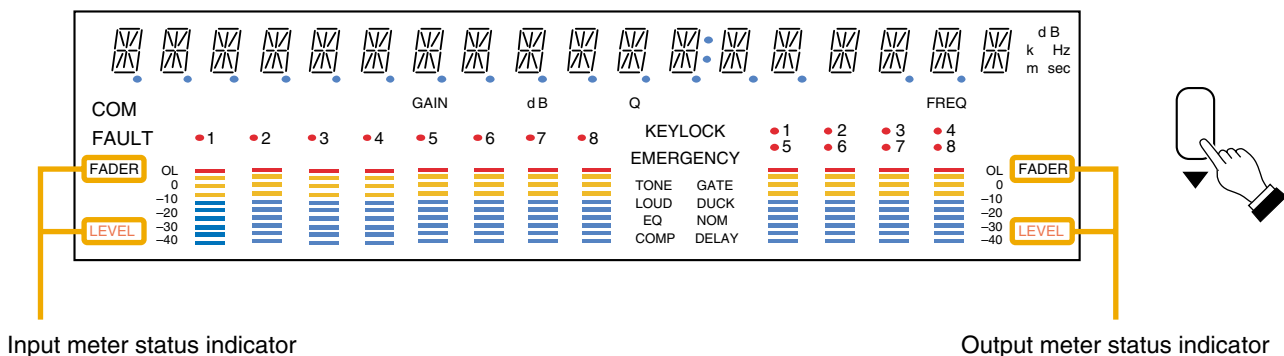
Note: The figure above is the VFD screen display when the input and output levels are indicated.

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[Rear]

• M-9000
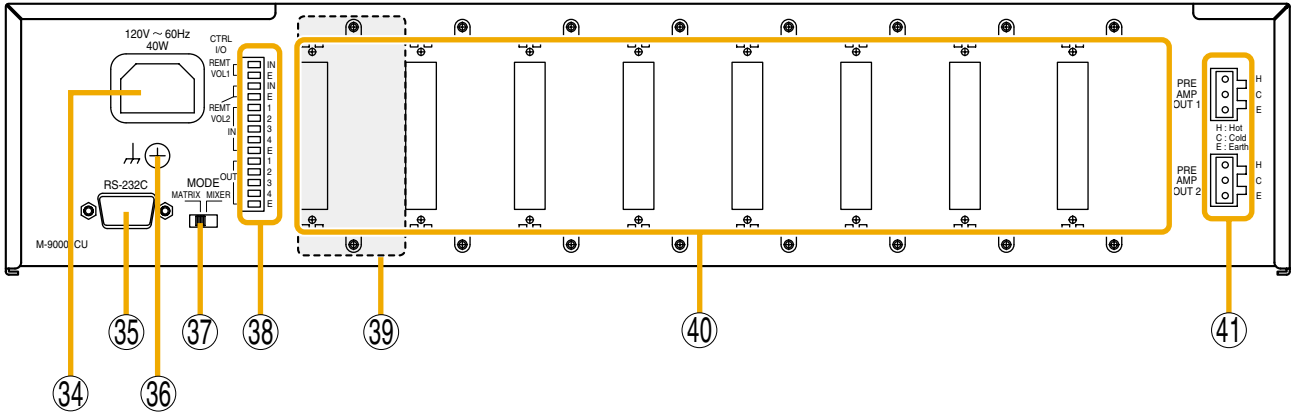
• A-9060DH, A-9120DH

This figure represents the A-9120DH.
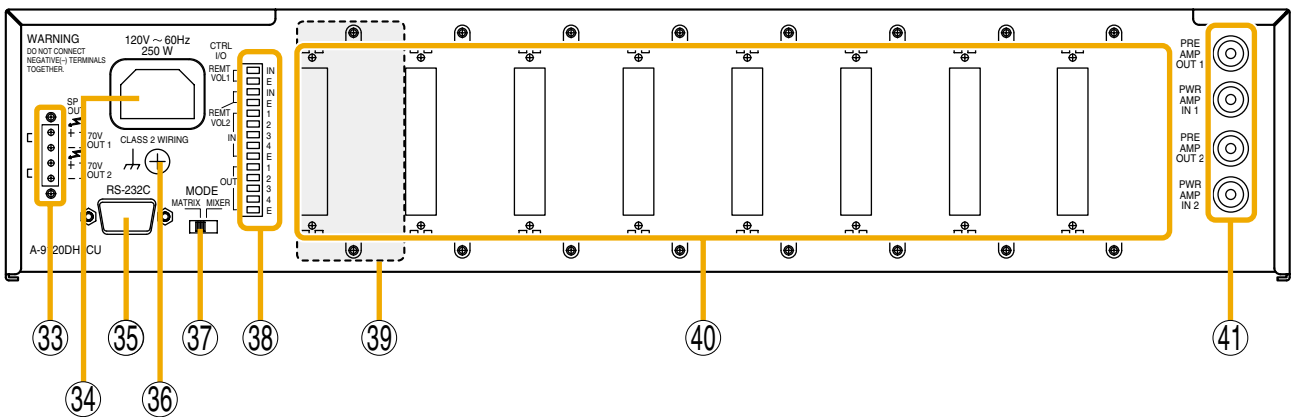
33. Speaker output terminal
Connects the 70 V high-impedance speaker.

34. AC inlet
Connects the supplied power cord.

35. RS-232C serial communication port
Connector for communications with a personal computer or control equipment.

36. Functional earth terminal
Hum noise may be generated when external equipment is connected to the unit. Connecting this terminal to the functional earth terminal of the external equipment may reduce the hum noise.
Note: This terminal is not for protective earth.

37. Mode switch
Selects the unit's operation mode (either matrix or mixer).
The switch is factory-preset to the matrix mode.

38. Control-I/O connection terminal
Connect a 10 kΩ (linear taper) variable resistor or input the DC voltage of 0 to +10 V to the remote volume control terminals (REMT VOL 1 and 2) when remotely adjusting the volume.
Input and output terminals (IN and OUT) are used to change the unit's internal status or output

internal status data to external equipment after having received various control signals.

39. Blank panel (accessory)
Attach the blank panels to open slots.

40. Module slots
900 Series or 9000 Series modules can be inserted into these slots.
(Refer to p. 66 "MODULE INSTALLATION.")

**41. Preamplifier output
and Power amplifier input terminals**

[M-9000 Matrix mixer]
There are 2 preamplifier output terminals.
For unbalanced connection, connect the unit's Hot and Earth terminals to the connected equipment's Signal and GND terminals, respectively. (Keep the unit's Cold terminal free.)
0 dB, 600 Ω, balanced type

[A-9060DH and A-9120DH Amplifiers]
There are 2 preamplifier output terminals and 2 power amplifier input terminals.
Connecting a plug to the power amplifier input terminal internally disconnects the preamplifier section from the power amplifier section.
Both terminals: 0 dB, 300 Ω, unbalanced type

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8.2. Optional Modules

8.2.1. D-001T (2-channel input module)

The D-001T module is designed for use with the 9000 Series amplifiers.
Up to 4 modules (8 channels in total) can be inserted into the amplifier.
The module can handle signals ranging from microphone level (−60 dB) to line level (−10 dB) in 9 input sensitivity levels.
Phantom power (24 V) can be supplied for microphone level (−60 dB to −30 dB) signals.
The D-001T module has an internal digital signal processor that can process input signals.

The D-001T module is required to use a VOX (Voice Operated Exchange) function and input channel level
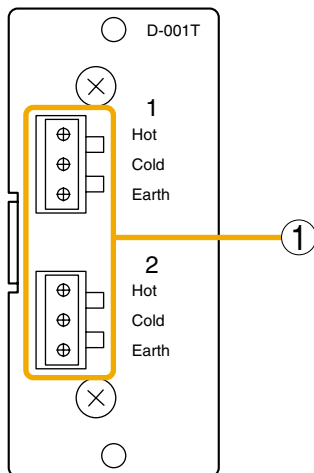
1. Monaural input terminals [1, 2]

Electronically-balanced 3P removable terminal blocks.
Input level: −60 dB to −10 dB selectable.
Input impedance is 10 kΩ when the phantom power is OFF, and 3 kΩ when ON.

8.2.2. T-001T (Audio output expansion module)

The T-001T module is designed for use with the 9000 Series amplifiers and can expand 2 output channels per module.
Since the main unit has 2 fixed outputs, the audio output can be expanded to 8 channels by using a maximum of 3 modules (6 channels).
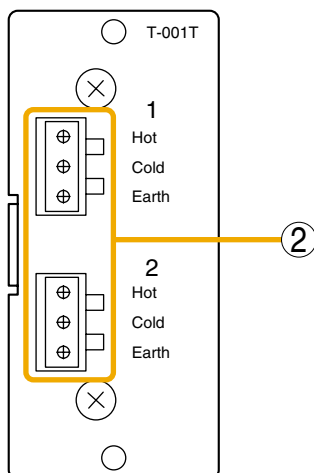
2. Monaural output terminals [1, 2]

Electronically-balanced 3P removable terminal blocks.
Output level: 0 dB
Output impedance: 600 Ω
For unbalanced connection, connect the unit's Hot and Earth terminals to the connected equipment's Signal and GND terminals, respectively. (Keep the unit's Cold terminal free.)

8.2.3. ZP-001T (Zone paging module)

The ZP-001T module is designed for use with the 9000 Series amplifiers and functions as an interface to connect the 9000 Series amplifiers to an analog PABX, allowing zone paging to be initiated from the PABX.

There are two operation modes: Ring signal and Paging port modes. Select one of the two modes when using this module.
The operation method differs depending on the set operation mode. (Refer to)
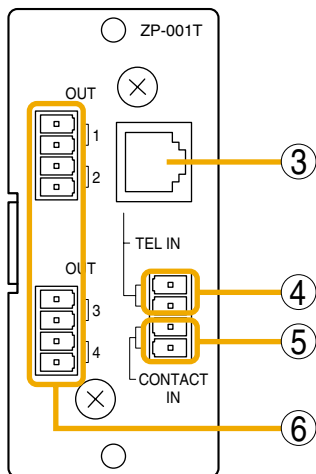
3. Telephone input terminal [TEL IN] (Modular jack)
Interface connector for an analog PABX.
Connect a PABX to this terminal when using the module in the ring signal mode.

4. Telephone input terminal [TEL IN]
4-pin removable terminal block, 2 pins are used for this input.
This terminal is internally connected in parallel with the telephone input terminal (modular jack) (3).
Connect a PABX to this terminal when the paging port is used (paging port mode).

5. Control input terminal [CONTACT IN]
4-pin removable terminal block, 2 pins are used for this input.
Connect the control output from a PABX to this terminal.

6. Control output terminals [OUT 1, 2, 3, 4]
4-pin removable terminal blocks, control output terminals.
This terminal is not used with the current firmware. It will be made usable in the near future when the firmware version is upgraded.
For details, please contact your nearest TOA dealer.

[Requirements of the PABX to be connected to the ZP-001T]

• The PABX shall be complaint with TIA/EIA-464-B standard.
• Specifications or conditions required in each of the following modes shall be satisfied:

Note: The ZP-001T may malfunction if the connected PABX does not meet the above requirements.

(A) When using the module in the Paging port mode
  • Connection: Line level paging port
  • Signaling method: DTMF (The module cannot be operated with dial pulse.)
  • Shall provide no-voltage make contact during paging calls.
  • Insensitive to whether loop voltage exists or not, and whether polarity of the loop voltage is reversed or not when a line connection is established.
  Note
  If the PABX does not meet the above requirements, use the D-001T module and set the trigger to "VOX" (Voice Operated Exchange) to initiate paging. In this case, the paging output channel cannot be selected, which differs from the operation by the ZP-001T.

(B) When using the module in the Ring signal mode
  • Connection: Analog two-wire extension line, loop start
  • Signaling method: DTMF (The module cannot be operated with dial pulse.)
  • Reorder tone: 120 IPM (impulses per minute) or less
  • Loop voltage: 24 VDC or more* (polarity insensitive)
  • Insensitive to whether polarity of the loop voltage is reversed or not at a call from the PABX.*
  • Loop voltage supply shall not be cut off from the beginning of a call to the reorder tone out.*
  • The state of CPC (Calling Party Controlled) break or "Open Loop Disconnect" shall be reset at the PABX.*

* Note that there is no need to meet these requirements provided that the ZP-001T's control input terminals are kept closed. However, noise may be output if the line is physically disconnected during a paging call because the ZP-001T cannot recognize the line cutoff nor stop output for 30 seconds after paging initiation.

8.2.4. C-001T (Control I/O expansion module)

The C-001T module is designed for use with the 9000 Series amplifiers and can provide up to 8 channels each of input and output expansion.
Since the main unit has 4 fixed inputs and outputs each, the control input and output can be expanded to up to 12 channels each when the C-001T module is used.
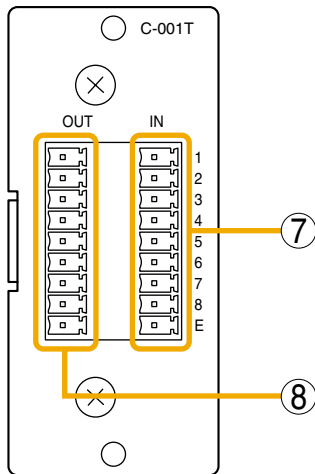
7. Control input terminal [IN 1, 2, 3, 4, 5, 6, 7, 8, E]
9-pin removable terminal block, 8-circuit control input terminal.
Individual input functions are assigned on the front panel setting screen of the main unit.

8. Control output terminal [OUT 1, 2, 3, 4, 5, 6, 7, 8, E]
9-pin removable terminal block, 8-circuit control output terminal.
Individual output functions are assigned on the front panel setting screen of the main unit.

9. OPERATION

To operate the unit in the matrix mode, make necessary settings in advance such as the audio input/output settings and event settings (including broadcast pattern and BGM broadcast group).

9.1. Normal Operation Mode

In the matrix mode, the unit need not be manually operated in normal conditions since the set broadcast patterns can be activated by means of remote control. However, it is also possible to adjust the volume or activate the broadcast patterns directly using the front panel-mounted keys and knobs.
This section describes operations that can be performed in normal operation state when the key lock function is disabled and the unit is set to the matrix mode.

9.1.1. Keys and knobs

[Front]   This figure represents the A-9120DH.

Power switch

Input channel selection keys
Input volume control
Input channel ON/OFF key
Output channel ON/OFF key
Output channel selection key

Parameter setting knob
Enter key
Memory key
Output volume control
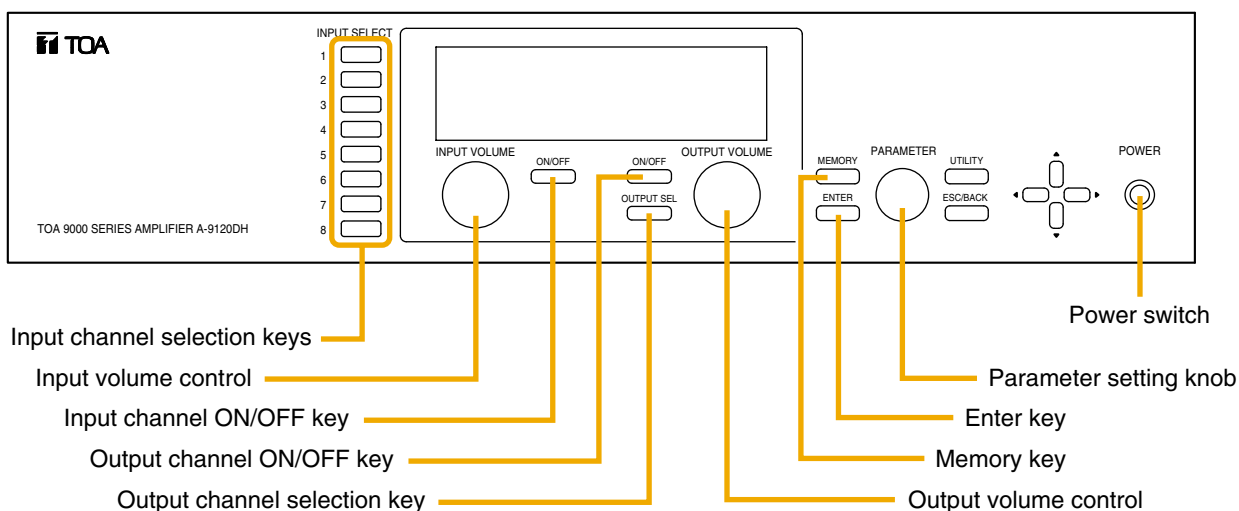
9.1.2. Power ON/OFF

Power is turned on when the power switch is pressed.
To turn off the power, hold down the power switch for 0.5 second or more.

9.1.3. Changing the input volume

Step 1. Press the Input channel selection key to choose the input channel for which you want to change the volume from those with the illuminated Input channel ON/OFF indicator (channel number).
The selected channel's selection indicator (red dot) lights, and the channel name and volume level are displayed on the VFD screen.

Step 2. Adjust the volume using the input volume control.
Tip
Whether the changed volume is saved or not depends on the setting item "Memory erasure or storage" in the UTILITY setting on page 43.

Step 3. After completing adjustments, press the Memory key.
The channel selection indicator extinguishes and the on-screen indication disappears.
Note
You cannot perform the Utility key operation as long as any indication is displayed in the upper line of the VFD screen.
To enter the Utility setting, delete the on-screen indication by pressing the Memory key.

9.1.4. Changing the output volume

Step 1. Press the Output channel selection key to turn on the Output channel selection indicator (red dot) for the output channel for which you want to change volume.
Channels to be selected will change each time the Output channel selection key is pressed.
The channel name and volume level are displayed on the VFD screen.

Step 2. Adjust the volume using the output volume control.
Tip
Whether the changed volume is saved or not depends on the setting item "Memory erasure or storage" in the UTILITY setting on page 43.

Step 3. After completing adjustments, press the Memory key.
The channel selection indicator extinguishes and the on-screen indication disappears.
Note
You cannot perform the Utility key operation as long as any indication is displayed in the upper line of the VFD screen.
To enter the Utility setting, delete the on-screen indication by pressing the Memory key.

9.1.5. Input channel ON/OFF

Input channels alternate between ON and OFF with each depression of the Input channel ON/OFF key.
The channel is ON when the input channel ON/OFF indicator (channel number) lights.
When an input channel is OFF, the Event including the input channel such as BGM or priority broadcast will not be activated, or cancelled if the Event is in progress.

9.1.6. Output channel ON/OFF

Output channels alternate between ON and OFF with each depression of the Output channel ON/OFF key.
The channel is ON when the Output channel ON/OFF indicator (channel number) lights.
When an output channel is OFF, no output goes through on the channel and the Event will not be cancelled.

9.2. Zone Paging

This section describes the method of initiating zone paging from a PABX (extension telephone) using the ZP-001T Zone Paging Module. Note that the operation method differs depending on the ZP-001T's operation mode setting: paging port mode or ring signal mode.

In both operation modes, when any of the following situations arises, the ZP-001T will not receive calls from the PABX or the line will be cut off if the ZP-001T is being engaged in paging call.
• The input channel for the ZP-001T is turned off.
• The input channel for the ZP-001T is muted by way of the control input.
• Emergency-mute (EMG-MUTE) is activated by way of the control input.

9.2.1. Paging port mode

Step 1. Activate the paging port from the extension telephone.
Since this method differs depending on the type of exchange, please read the instruction manual for the extension telephone.
When the paging port is activated and the control input terminal is closed, the ZP-001T module connects the line.

Step 2. Select the output channel.
Press [0] first, followed by the output channel number ([1] – [8] or [9] when selecting all numbers simultaneously). Pressing the [#] key completes the output channel selection.
Example: To select Outputs 2 and 3, press [0] [2] [3] [#].
To make an all-zone call, press [0] [9] [#].

Step 3. Begin paging.
When the pre-paging tone is set to ON (p. 31), begin paging after the tone sounds.
When the selected output channel is being used by other broadcast with higher priority level, a busy tone is heard from the handset, indicating that paging cannot be performed.

Step 4. Deactivate the paging port to terminate paging.
Since this method differs depending on the type of exchange, please read the instruction manual for the extension telephone.

9.2.2. Ring signal mode

Step 1. Make a call from the extension telephone to the ZP-001T module.
After a calling tone sounds twice, the ZP-001T receives the call and a callback tone is heard from the handset.

Step 2. Select the output channel.
Press [0] first, followed by the output channel number ([1] – [8] or [9] when selecting all numbers simultaneously). Pressing the [#] key completes the output channel selection.
Example: To select Outputs 2 and 3, press [0] [2] [3] [#].
To make an all-zone call, press [0] [9] [#].

Step 3. Begin paging.
When the pre-paging tone is set to ON (p. 31), begin paging after the tone sounds.
Paging can be performed within 30 seconds after the call gets through. After 30 seconds have elapsed, the line is automatically disconnected.
When the selected output channel is being used by other broadcast with higher priority level, a busy tone is heard from the handset, indicating that paging cannot be performed.

Step 4. To terminate paging, press [0] [0] [#], and then replace the handset.
If dialing [0] [0] [#]:   Pressing a first [0] terminates paging (a DTMF tone for the first [0] is output), and the ZP-001T disconnects the line after the [#] has been pressed.

If replacing the handset without dial operation: After a signal tone is transmitted about 3 times, the paging is terminated and the line disconnected.

9.3. Releasing Key Lock

The key lock function prevents the front-mounted keys or knobs from being tampered. (Refer to p. 56 "Key Lock Function setting.")
You can temporarily operate the locked keys by entering a password to unlock them. Operation after password entry differs depending on the locked keys.

Step 1. Press the locked key.
The password entry screen is displayed with the flashing indication of the character entry position on the extreme left.

Step 2. Press the Enter key if no password has been set.
If the password has been set, enter it using the Input channel selection keys.

Entering a character causes the next character entry position to flash for character entry.
When the entered password is correct, the locked key is released. If the registered password is comprised of 1 to 3 characters, as soon as entered 1 to 3 characters agree with them, the locked key is released.

When released keys are those of the type related to input and output operations, they become temporarily operable, but revert to the locked state if they are left unused for 1 minute.

When utility-related keys are released, the key lock menu screen is displayed, clearing the password setting automatically.
Move to the screen for which you want to make a change. When wishing to lock the keys using the password even after the setting has been changed, set the password again. (Refer to p. 60)
To simultaneously release all locked keys, set the all-key lock function to OFF on the all-key lock ON/OFF setting screen.

When the power switch is locked, the password entry screen is not displayed if the power switch is pressed, and so the power cannot be turned off.

Since the key lock function helps to prevent the front panel keys or knobs from being tampered, their operation can be performed by controls through the control input terminals even if the keys or knobs are locked.

(Example when input keys are locked)

INPUT SELECT
1 ⬭ *1*

E N T E R P A S S W O R D ➢ _ _ _ _

INPUT SELECT
2 ⬭ *2*

E N T E R P A S S W O R D ➢ ＊ _ _

INPUT SELECT
6 ⬭

E N T E R P A S S W O R D ➢ ＊ ＊ ＊ ＊

I N 1 − I N 1   : O N ＋ 1.0
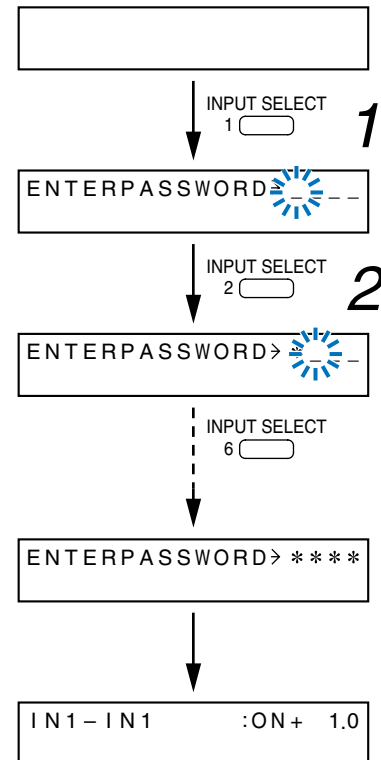
10. EVENT ACTIVATION OR PAGING WHILE POWER IS OFF

The 9000 Series amplifiers are designed to initiate paging by way of the ZP-001T module or activate the Event even while the power is OFF*.

* The state that the front panel-mounted power switch is set to OFF position, and the power is still supplied to the unit from the AC inlet.

The unit operates as follows when the power is switched OFF:

- Events by control input (including the C-001T module) can be activated, but those using the VOX (Voice Operated Exchange) function cannot be activated.
- The unit returns to Power-OFF state after Event or paging completion.
- Broadcasts can be initiated from the ZP-001T regardless of whether the operation mode is set to Ring Signal or Paging Port.
- Broadcasts cannot be performed for 2 seconds during which the Event is activated and the power amplifier begins to operate.
- When the power is switched OFF while an Event is being activated by way of the control input with the power ON, even if the Event is still left activated, the above-mentioned Events or paging calls from the ZP-001T will have a priority regardless of priority level.

Controls to be performed during power-OFF

The power switch located on the amplifier front panel is a soft-switch, and not a mechanical switch to be used to turn on or off the power supply's primary side. Therefore, the internal microcomputer is still operating even if the power switch is set to OFF.

The following controls can be performed when the power is OFF.

- Remote power control by control input
  Power can be switched on and off using the external contact.

- Event activation by control input
  Turns on the unit's power and activates the assigned Event (Trigger-set Event having the input with Priority 1 – 7) using the external contact. The unit returns to power-OFF state after Event operation completion.

- Paging by the ZP-001T
  Turns on the unit's power. The unit returns to power-OFF state after paging completion.

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11. SYSTEM DESIGN-TO-OPERATION FLOW

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1. Design the system.

 1.1. Determine the input and output equipment.
 1.2. Set the input-to-output routing and priority.

---

2. Prepare equipment.

 2.1. Mount modules. (Refer to p. 66.)
 2.2. Check to confirm that the Mode switch is set to the matrix mode. (Refer to p. 9.)
 2.3. Connect the power source to the unit using the power cord, then turn on the power switch.

---

3. Perform equipment settings.

 3.1. Set the audio input parameters. (Refer to p. 30.)
 3.2. Set the audio output names. (Refer to p. 33.)
 3.3. Set the Event. (Refer to p. 34.)
 3.4. Set the utility function. (Refer to p. 38.)
 3.5. Perform preliminary settings for the adjustment function. (Refer to p. 46.)
 3.6. Set the key lock function. (Refer to p. 56.)
 3.7. Switch off the power. (Refer to p. 20.)

---

4. Install equipment.

 4.1. Mount equipment in a rack. (Refer to p. 72.)
 4.2. Perform connections. (Refer to p. 68.)

---

5. Adjust equipment.

 5.1. Switch on the power. (Refer to p. 20)
 5.2. Make adjustments while monitoring the sound. (Refer to p. 46.)

---

6. Operate the system.

 • Activate set broadcast patterns through remote control. (Refer to p. 68.)
 • Perform operation using the front panel keys and knobs. (Refer to p. 20.)
 • Make paging calls. (Refer to p. 22.)

12. SETTING

Ensure that the Mode switch on the unit's rear panel is set to the MATRIX position before performing the setting. The setting items include those which must be set before operation (audio input/output, Event, and utility settings), those which are adjusted while actually monitoring the sound (adjustment mode settings), and those which restrict operations of front panel keys and knobs (key lock settings).

Select each item on the setting menu screen that appears after entering the setting mode, then proceed to the detailed settings.Broadcast, if present, is not interrupted when you enter the setting menu screen, but is interrupted when you proceed further to the subsequent setting screen except for the Adjustment mode.

If the AC power supply is cut off during setting, the parameters that have been set so far are all canceled. When the power returns, the unit is powered up to the normal operation state just before entering the setting mode.

12.1. Setting Menu Flow

Normal operation mode

MEMORY   UTILITY

PARAMETER

Setting menu screen   (P. 30)

I N P U T – S E T T I N G

Perform settings related to individual input and output channel names or input sources.

PARAMETER

Setting menu screen   (P. 33)

O U T P U T – S E T T I N G

Set the name of each output channel.

PARAMETER

Setting menu screen   (P. 34)

E V E N T – S E T T I N G

Set broadcast patterns, BGM broadcast groups and activation, and BGM broadcast termination.

PARAMETER

Setting menu screen   (P. 38)

U T I L I T Y – S E T T I N G

Perform settings related to remote control, priority (FIFO and LIFO) settings and other utility settings.

PARAMETER

Setting menu screen   (P. 46)

A D J U S T

Operate the unit actually and adjust the sound in real time while monitoring the sound.

PARAMETER

Setting menu screen   (P. 56)

K E Y L O C K

Restrict the use of the unit's front panel-mounted keys and knobs.

26

12.2. Setting Keys and Knobs

Output channel ON/OFF key

Input channel ON/OFF key

Memory key

Utility menu key

[Front]

Input channel selection keys

Input volume control

Output channel selection key

Output volume control

Enter key

Screen shift keys

Escape/Back key

Parameter setting knob
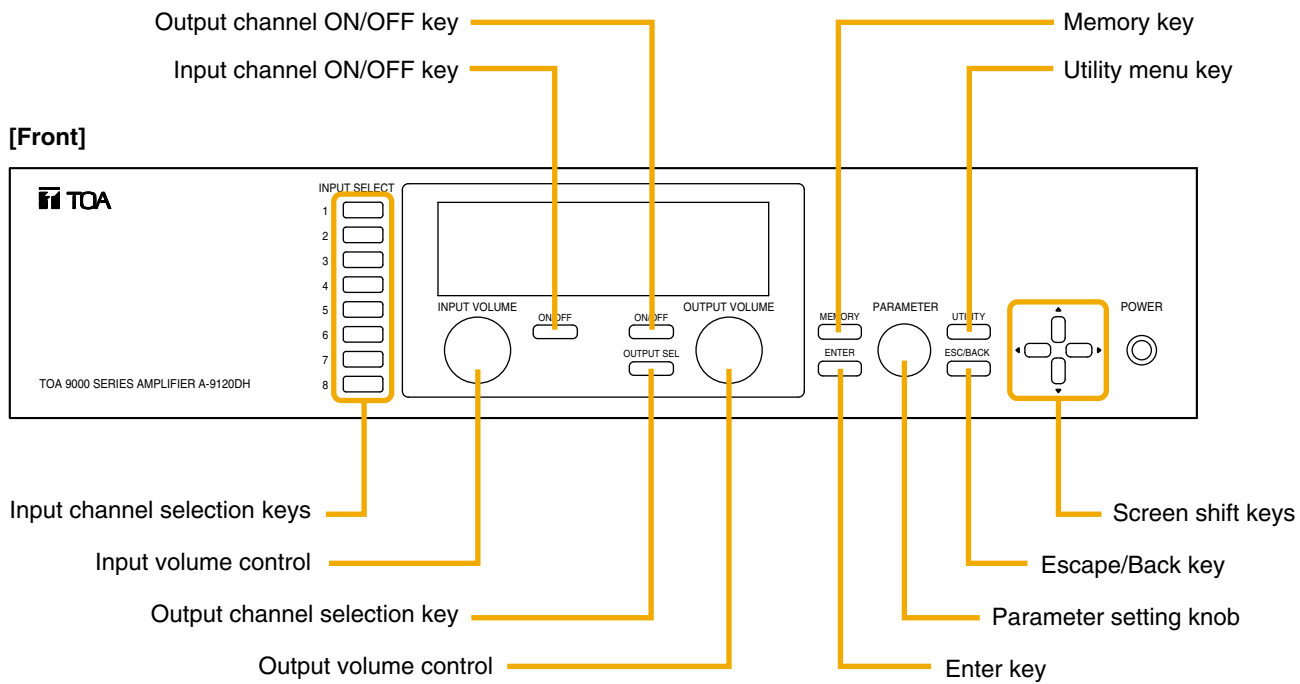
This figure represents the A-9120DH.

12.3. Basic Setting Operation

12.3.1. Entering the setting mode

Holding down the Utility menu key for 2 seconds or more displays the setting menu screen.

Note
You cannot enter the setting mode as long as any indication is displayed in the upper line of the VFD screen.
To enter, delete the indication by pressing the Memory key, then hold down the Utility key for 2 seconds or more.

Normal operation mode

UTILITY

Setting menu screen

INPUT–SETTING
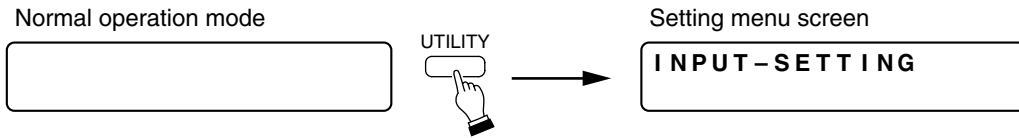
12.3.2. Setting screen operation examples

[Moving the setting screen or setting item]

Use the Screen shift key mainly. (The Enter and Escape/Back keys may also be used.)

• Examples of using the Left and Right shift keys

When moving the setting screen:

INPUT–SETTING
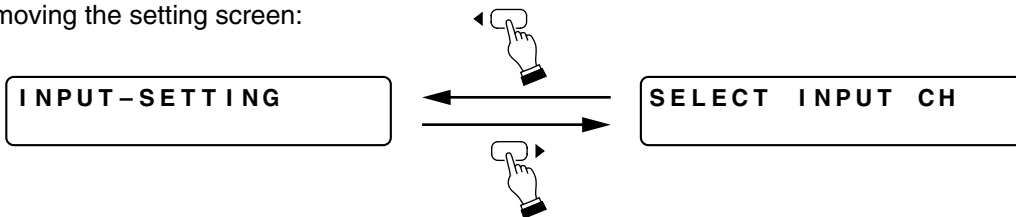
SELECT INPUT CH

When moving the setting item on the same screen:

HPF 400HZ LPF–12.5

HPF–400HZ LPF–12.5
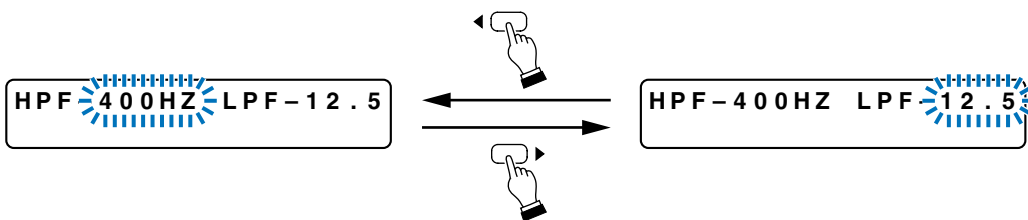
• Example of using the Up and Down shift keys

IN1–INPUT1

IN1 PRIORITY 8

28
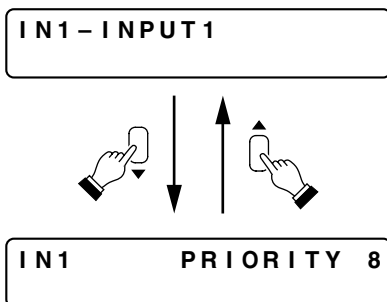
[Setting content selection]

Use the Parameter setting knob in most cases.
In some cases, however, use the input and output channel selection keys, or the input and output channel ON/OFF keys.
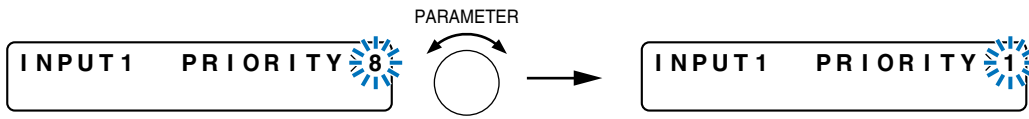
For example, to select an input channel, use the input channel selection key as shown below.
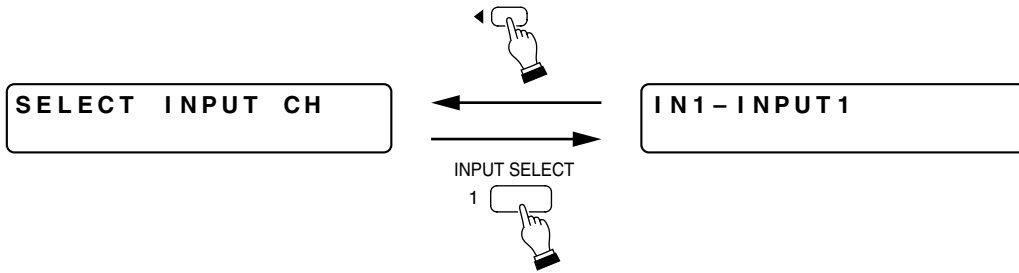
12.3.3. Returning from setting mode to normal operation mode

- Pressing the Escape/Back key when the setting screen is displayed returns the display to the setting start screen on the upper hierarchy level.
- Pressing the Memory key at the setting menu screen saves the setting contents and returns the display to the normal operation mode.
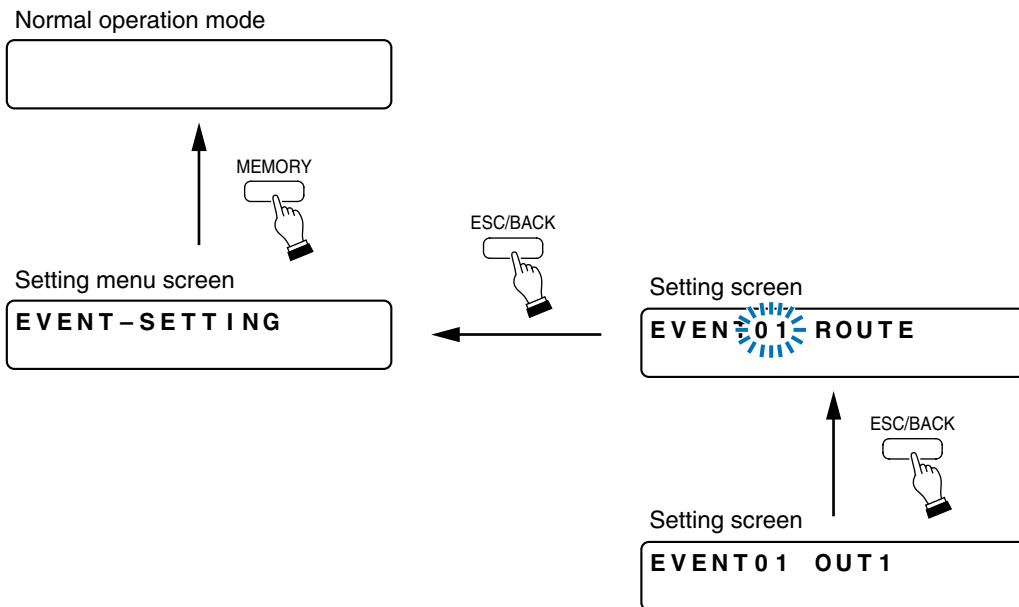
12.4. Audio Input Parameter Setting

12.4.1. Setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.
Use the Parameter setting knob for each parameter selection.

Normal operation mode

MEMORY   UTILITY

Press for over 2 seconds.

PARAMETER

Setting menu screen
INPUT−SETTING

Input channel selection
SELECT INPUT CH

INPUT SELECT
1 – 8

ESC/BACK

Input channel name setting (p. 31)
IN1−_ _ _ _ _ _ _

(For the channel on which the D-001T is used)

Input sensitivity setting (p. 31)
IN1−SENSITIVITY−10

Phantom power ON/OFF setting (p. 31)
IN1−PHANTOM−OFF

VOX ON/OFF setting (p. 31)
IN1−VOX−OFF

(For the channel on which the ZP-001T is used)

Pre-paging tone ON/OFF setting (p. 31)
PREPAGETONE−OFF

Output format setting (p. 32)
OUT=▷OUTPUT SELECT

Operation mode setting (p. 32)
MODE=▷PAGING PORT

Priority setting (p. 32)
IN1   PRIORITY 8

Ducker ON/OFF setting (p. 32)
IN1−DUCKER OFF

Input channel name setting

Note
Set the priority level higher than level 8 for the input channel to be used for broadcast (e.g. paging using the ZP-001T) that overrides BGM broadcasts.

30

12.4.2. Audio input setting items

Use the Parameter setting knob for each parameter selection.

Input channel name setting

> **I N 1 – _ _ _ _ _ _ _**

The flashing portion is the cursor position for entering channel name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key.
Entering a new name overwrites the existing name, if there is.
To delete the character, select [_] (under-bar) with the Parameter setting knob. Space cannot be entered.
Up to 7 characters can be used to set the name.
Even when an input channel name has been set, some setting screens display the channel number, not the set name.

Setting Range	7 characters (default: IN1 – 8)

Input Sensitivity setting (when the D-001T is used)

> **I N 1 – S E N S I T I V I T Y – 1 0**

Select the input sensitivity from the following 9 levels depending on the input sources:

Setting Range	–60, –54, –48, –42, –36, –30, –24, –18, –10 dB (default)

Phantom Power ON/OFF setting (when the D-001T is used)

> **I N 1 – P H A N T O M – O F F**

Set the Phantom power to ON or OFF.

Setting Range	ON, OFF (default)

• ON: Supplies the phantom power.
• OFF: Does not supply the phantom power.

VOX ON/OFF setting (when the D-001T is used)

> **I N 1 – V O X – O F F**

Set the voice operated exchange (VOX) to ON or OFF.

Setting Range	ON, OFF (default)

• ON: Activates the set Event only when the audio signals are input to the module.
• OFF: The VOX function does not work.

Pre-paging tone ON/OFF setting (when the ZP-001T is used)

> **P R E P A G E T O N E – O F F**

Set whether or not to sound a one-tone chime before paging.

Setting Range	ON, OFF (default)

Output format setting (when the ZP-001T is used)

O U T = ≫ **O U T P U T   S E L E C T**

Select the paging output.

Setting Range	OUTPUT SELECT (default)

- OUTPUT SELECT: Sets the 9000 Series amplifiers' output or the T-001T's output as the paging output.
- ZONE SELECT: Sets the ZP-001T's contact output as the paging output.
  Note that the Zone Select mode cannot be selected with the current firmware.

Operation mode setting (when the ZP-001T is used)

M O D E = ≫ **P A G I N G   P O R T**

Select the method of activating paging.

Setting Range	PAGING PORT (default), RING SIGNAL

- PAGING PORT: Paging is operated if a start signal (no-voltage make signal) is received from the paging port when the connection between the unit and PABX is established.
- RING SIGNAL: Paging is operated if an IR signal is received when the connection between the unit and PABX is established. The ZP-001T module functions as a telephone.

Priority setting

I N 1   **P R I O R I T Y   8**

Assign priority levels of 1 – 8 (high to low) to the selected input signals.

Setting Range	1 – 8 (default: 8, 7 only when ZP-001T is used)

The priority level given to each Event is based on the priority level set here.
The signal set to priority level 8 is handled as BGM in Event settings.
It is possible to assign the same priority level to multiple inputs.
When two or more inputs are simultaneously broadcast in the same zone, the input with higher priority takes precedence. However, when multiple inputs with the same priority are simultaneously broadcast, they are allowed to go through according to the priority settings (refer to).
Set the priority level higher than level 8 for the input channel to be used for broadcast (e.g. paging using the ZP-001T) that overrides BGM broadcasts.

Ducker ON/OFF setting

I N 1 – D U C K E R   **O F F**

Set the ducker function to ON or OFF.
When multiple input signals are simultaneously broadcast, the ducker function automatically attenuates input signals of other channels with lower priority.

Setting Range	ON, OFF (default)

The ducker function does not work among the input channels with the same priority level.
The function does not work either unless the relevant input channels are all set for the ducker function, permitting all the input signals to be mixed and output.

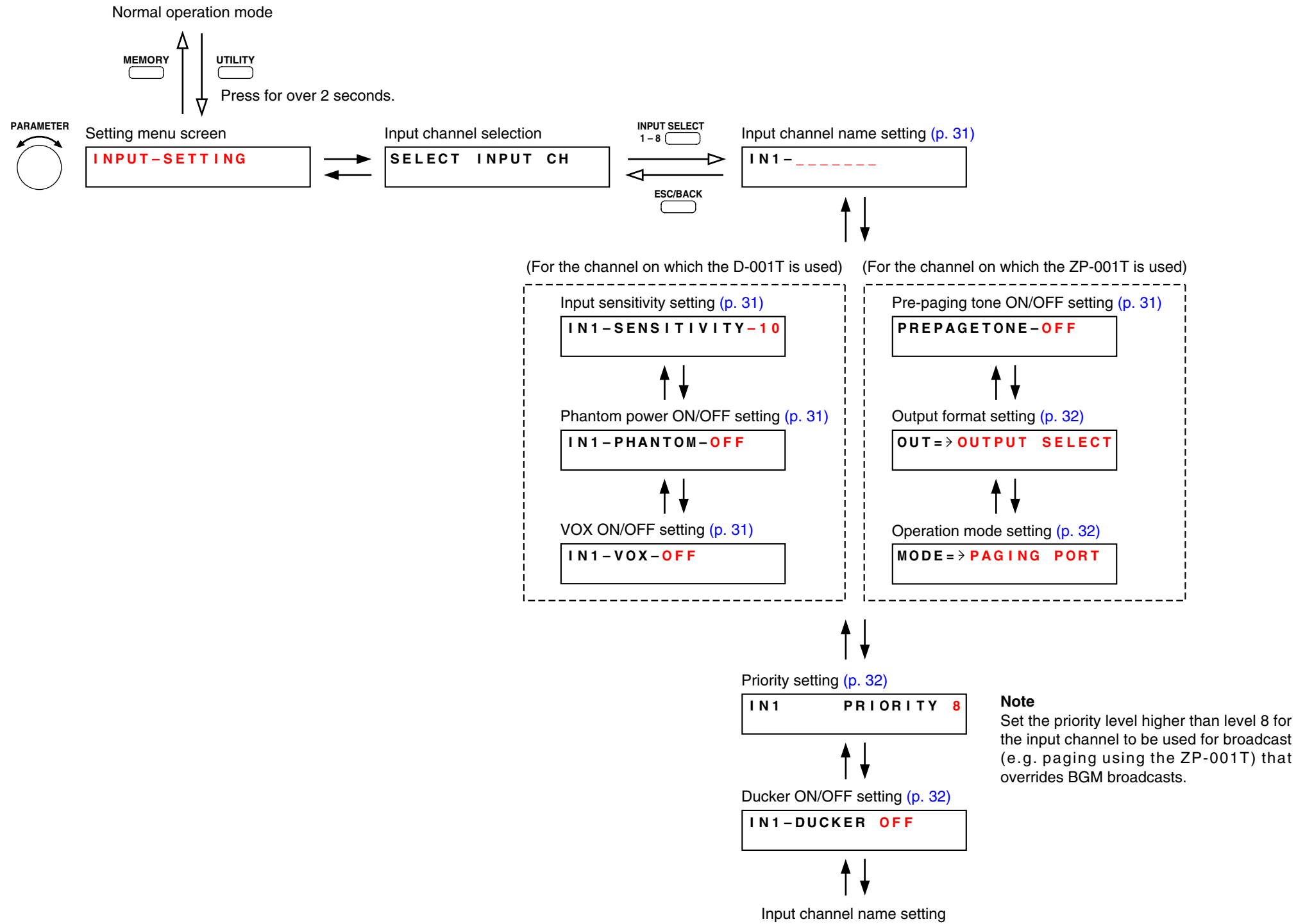## 12.5. Audio Output Name Setting

12.5.1. Setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.
Use the Parameter setting knob for each parameter selection.

Normal operation mode

MEMORY   UTILITY

Press for over 2 seconds.

PARAMETER

Setting menu screen

OUTPUT−SETTING

Output channel selection

SELECT OUTPUT CH

OUTPUT SEL

ESC/BACK

Output channel 1 name setting

OUT1−_ _ _ _ _ _ _

OUTPUT SEL

Note
Any output channel name setting screen can return to the output channel selection screen using the Escape/Back key.

Output channel 2 name setting

OUT2−_ _ _ _ _ _ _

OUTPUT SEL

(For the channel on which the T-001T is used)

Output channel 3 name setting

OUT3−_ _ _ _ _ _ _

OUTPUT SEL

OUTPUT SEL

Output channel 8 name setting

OUT8−_ _ _ _ _ _ _

OUTPUT SEL

Output channel 1 name setting
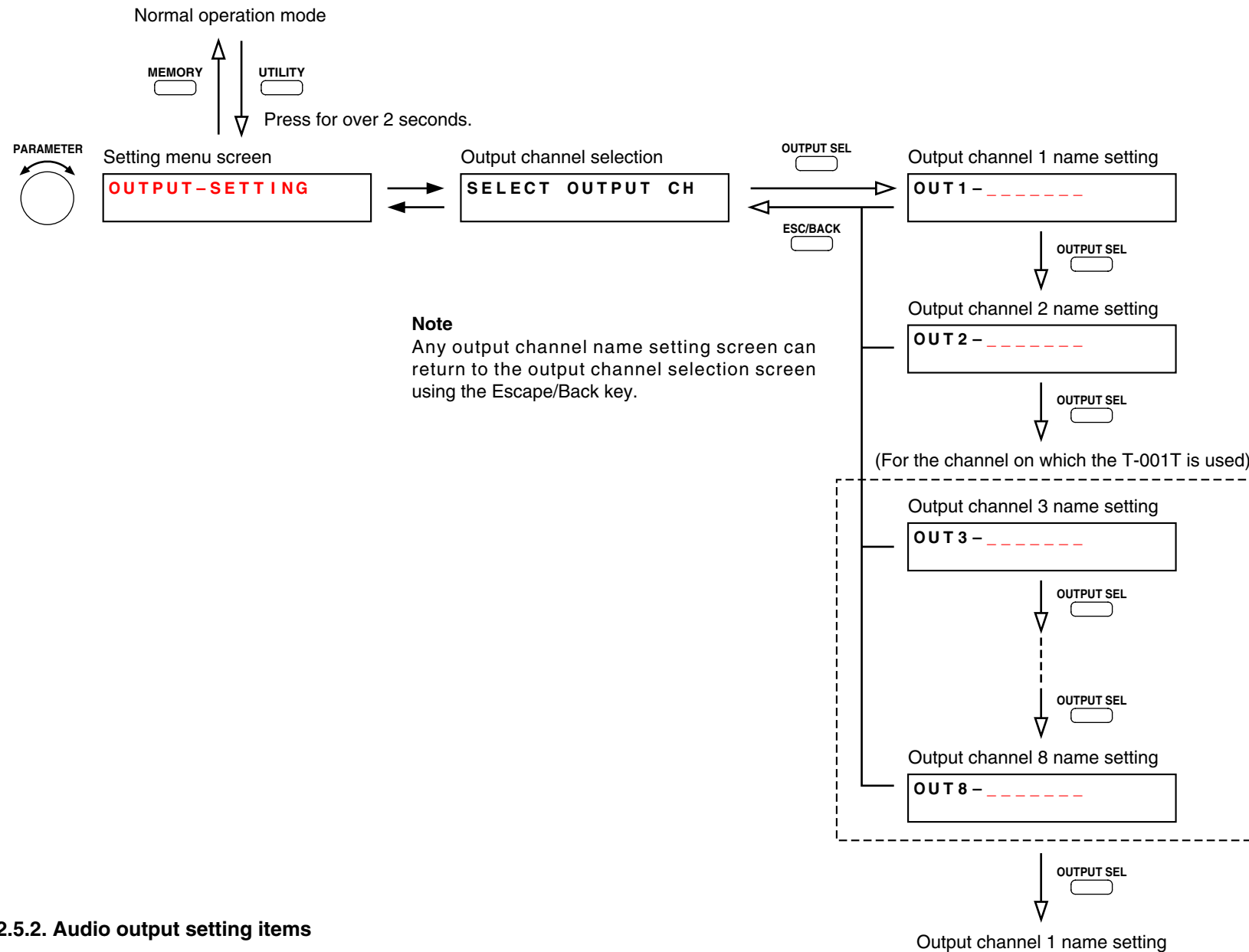
12.5.2. Audio output setting items

Output channel name setting

OUT1−_ _ _ _ _ _ _

The flashing portion is the cursor position for entering channel name characters.
Select a character from the alphanumeric character list by rotating the Parameter setting knob, then move the cursor with the Right shift key.
Entering a new name overwrites the existing name, if there is.
To delete the character, select [_] (under-bar) with the Parameter setting knob. Space cannot be entered.
Up to 7 characters can be used to set the name.
Even when an output channel name has been set, some setting screens display the channel number, not the set name.

Setting Range	7 characters (default setting: OUT1 − 8)

12.6. Event Setting

12.6.1. Setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Normal operation mode

MEMORY   UTILITY

Press for over 2 seconds.

PARAMETER   Setting menu screen

EVENT−SETTING

Event number selection (p. 35)

EVENT01 NONE

Event classification setting (p. 35)

EVENT01 NONE

PARAMETER (When Event classification is set to ROUTE)

EVENT01 ROUTE

PARAMETER (When Event classification is set to BGM END)

EVENT01 BGMEND

PARAMETER (When Event classification is set to BASE)

EVENT01 BASE

Input channel setting (p. 35)

To select, INPUT SELECT 1−8

EVENT01 IN1

Output channel setting (p. 35)

To select, OUTPUT SEL
To determine, ON/OFF

EVENT01 OUT1

Trigger setting (p. 36)

EVENT01TRIG C−IN01

Interlock output control ON/OFF setting (p. 36)

EVENT01 SYNC ON

(When the interlock output control is ON)

Interlock output terminal setting (p. 36)

EVENT01 COUT01

Event classification setting

Trigger setting (p. 36)

EVENT01TRIG C−IN01

Event classification setting

BGM Event number selection (p. 37)

EVENT01 BASE 02

Trigger setting (p. 37)

EVENT01TRIG C−IN01

Event classification setting

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12.6.2. Event setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Event number selection

```
E V E N T 0 1   N O N E
```

Event number
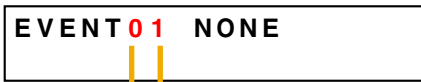
Setting Range	01 – 32 (default: 01)

Event classification setting

```
E V E N T 0 1   N O N E
```

Event classification

Setting Range	NONE (default), ROUTE, BGM END, BASE

- NONE: Invalidates the selected Event.
- ROUTE: Sets broadcast patterns consisting of input/output, trigger, and other settings.
- BGM END: Used to perform settings for terminating all Events to which inputs with priority 8 are assigned.
- BASE: Groups broadcast patters which have been set to "Priority 8 Input with Trigger set to NONE " in Classification ROUTE, so that they may be activated with a single trigger. This classification is normally used to set the Event of BGM broadcasts.

Note: Screens that appear when the Up or Down shift key is pressed differ depending on the Event classification settings.

Input channel setting (when Event classification is set to ROUTE)

```
E V E N T 0 1   I N 1
```

Input channel name

Set the input channel using the Input channel selection key.
The name of the set input channel is displayed on the screen.
One input channel can be set per Event.

Setting Range	IN1 – 8 (default: IN1)

Output channel setting (when Event classification is set to ROUTE)

```
E V E N T 0 1   O U T 1
```

Output channel name
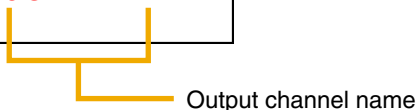
Setting Range	OUT1 – 2, Max. 8 when T-001Ts are added (default: OUT1) **Note:** 2 or more channels selectable.

- Select the output channel using the Output channel selection key. The name of selected output channel is displayed on the screen. Then confirm the selection by setting the Output channel ON/OFF key to ON (the output channel indicator, red dot on the VFD screen lights).
- Repeat above operations to set multiple outputs.

Trigger setting (when Event classification is set to ROUTE)

E V E N T 0 1 T R I G C - I N 0 1

Set how to activate the selected Event.

Setting Range	NONE (default), VOX, C-IN01 – 04 (C-IN01 – 12 when C-001T is used)

- C-IN1 to C-IN04 (C-IN1 to C-IN2 when the C-001T module is used):
  Closing the designated control input terminal activates the Event.
- VOX: The event is activated when the selected input channel receives a signal.
  Note
  The D-001T module must be used for input, and the VOX set to ON in the audio input setting.
- NONE: External control cannot be used for activation. Set the trigger setting here to NONE when designating the selected Event number as a BGM pattern.

Interlock output control ON/OFF setting (when Event classification is set to ROUTE)

E V E N T 0 1 S Y N C O N

Set whether or not to close the control output terminal in synchronization with the Event's activation.

Setting Range	ON, OFF (default)

- ON: Control output terminal is closed when the Event is activated. (The terminal is continuously closed during Event activation.)
- OFF: Control output does not interlock with the Event's activation.

Interlock output terminal setting (when Event classification is set to ROUTE)

E V E N T 0 1 C O U T 0 1

Set the control output terminals 1 – 4 (1 – 12 when the C-001T is used) which are closed in synchronization with the Event's activation.

Setting Range	COUT01 – 04, C-OUT01 – 12 when C-001T is used (default: COUT01) **Note:** When the interlock output control ON/OFF setting is ON.

Trigger setting (when Event classification is set to BGM END)

E V E N T 0 1 T R I G C - I N 0 1

Activating the selected Event terminates all Events for Priority-8 inputs.
Set the control input that activates the Event termination.

Setting Range	C-IN01 – 04, C-IN01 – 12 when C-001T is used (default: C-IN01) **Note:** The control input terminals that have already been set cannot be used.

BGM Event number selection (when Event classification is set to BASE)

EVENT01　BASE　02	→	EVENT01　BASE　02　✳

ENTER

Event number　　　　　　　　　　　　　　　　Confirmation indicator
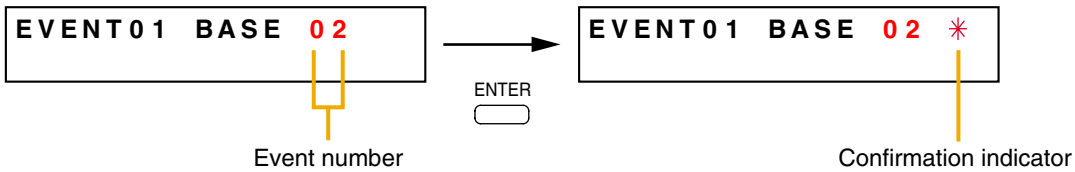
Setting Range	01 – 32 (default: 01)

Rotating the Parameter setting knob displays only the priority-8 inputs with the trigger function set to NONE (normally BGM broadcasts) out of the Event numbers with Event classification set to ROUTE.

When the Enter key is pressed for confirmation, an asterisk [✳] is displayed on the right of the confirmed number.

Up to 4 Event numbers can be set by repeating above-mentioned operations.

If the number of confirmed Event numbers exceeds 4, each number is erased in chronological order.

Trigger setting (when Event classification is set to BASE)

EVENT01TRIG　C-IN01

Set how to activate the selected Event.

Setting Range	NONE, C-IN01 – 04, C-IN01 – 12 when C-001T is used (default: C-IN01)

• C-IN01 to C-IN04 (C-IN01 to C-IN12 when the C-001T module is used):
　　Closing the designated control input terminal activates the Event. The control input terminals that have already been set cannot be set.

• NONE:　External control cannot be used for activation.

12.7. Utility Setting

12.7.1. Setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
Unless otherwise specified, the indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Normal operation mode

MEMORY UTILITY Press for over 2 seconds.

PARAMETER Setting menu screen

UTILITY−SETTING

Function selection (p. 40)
(when the control input is selected)

UTILITY C−IN

PARAMETER or

Control input number selection (p. 40)

C−IN01−> NONE

Event assignment display (p. 40)

C−IN01 EVENT NONE

Control input function setting (p. 40)

C−IN01−> NONE

Channel number selection
(When the control input function
is set to VOLUP or VOLDOWN)

To select, INPUT SELECT 1−8 or OUTPUT SEL

PARAMETER (When the control input function
is set to VOLUP) (p. 41)

C−IN01−> VOLUP

Channel number selection (p. 41)

C−IN01−VOLUP> IN1

Volume increasing level setting (p. 41)

C−IN01−VOLUP 0.5

Control input function setting

PARAMETER (When the control input function
is set to VOLDOWN) (p. 41)

C−IN01−> VOLDOWN

Channel number selection (p. 41)

C−IN01−VOLDWN> IN1

Volume decreasing level setting (p. 41)

C−IN01−VOLDWN 0.5

Control input function setting

(When the control input function
is set to MUTE) (p. 41)

C−IN01−> MUTE

Channel number selection (p. 41)

C−IN01−MUTE> IN1

To select, INPUT SELECT 1−8 or OUTPUT SEL

Interlock output control setting (p. 41)

C−IN01−SYNC ON

(When the interlock output control is ON)
Interlock output terminal setting (p. 42)

C−IN01−COUT01

Control input function setting

PARAMETER (When the control input function
is set to POWER) (p. 42)

C−IN01−> POWER

PARAMETER (When the control input function
is set to EMG-MUTE) (p. 42)

C−IN01−> EMG−MUTE

Interlock output control setting (p. 42)

C−IN01−SYNC ON

(When the interlock output control is ON)
Interlock output terminal setting (p. 42)

C−IN01−COUT01

Control input function setting

To the next page

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Function selection
(when the control output is selected)

`UTILILY     C-OUT`

Control output number selection (p. 43)

`C-OUT01→  NONE`

Control output function selection (p. 43)

`C-OUT01→  NONE`

PARAMETER

(When the control output function is set to POWER) (p. 43)

`C-OUT01→  POWER`

Interlock output control display (p. 43)

`C-OUT01 EVENT NONE`

PARAMETER or

Function selection
(when the memory setting at power-off is selected)

`UTILITY     POWEROFF`

Memory erasure or strage setting (p. 43)

`POWEROFF-→DEL`

PARAMETER or

Function selection
(when the RS-232C is selected)

`UTILITY     RS232C`

Communication speed setting (p. 44)

`SERIAL SPEED=    57.6`

PARAMETER or

Function selection
(when the module classification is selected)

`UTILITY     MODULE`

Slot number selection, 900 series module classification setting (p. 44)

`SLOT1=OTHERS`

Function selection
(when the Event activation at power-on is selected)

`UTILITY     EVENT`

Setting the Event to be recalled when power is switched on (p. 45)

`POWERON-EVENT→LAST`

PARAMETER or

PARAMETER or

Function selection
(when the priority is selected)

`UTILITY     PRIORITY`

Priority setting (p. 44)

`PRIORITY→FIFO`

Function selection
(when the firmware version is selected)

`UTILITY     VERSION`

Firmware version indication (p. 45)

`FIRM VERSION=1.10`

PARAMETER or

PARAMETER or

Function selection
(when the remote volume control is selected)

`UTILITY     REMOTE`

Remote volume control channel setting (p. 44)

`REMOTE1→OUTPUT1`

Function selection
(when the memory initialization is selected)

`UTILITY     MEMORY`

Memory initialization (p. 45)

`INITIALIZE OK?`

To determine, ENTER

To cancel, ESC/BACK or ◄▢

PARAMETER or

PARAMETER or

Function selection
(when the control input is selected)

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12.7.2. Utility setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Function selection

U T I L I T Y   C - I N

Setting Range	C-IN (control input, default), C-OUT (control output), POWEROFF, RS232C, MODULE, PRIORITY, REMOTE (remote volume), EVENT (Event activation at power-on), VERSION, MEMORY (memory initialization)

- CIN: Sets the functions to be assigned to the control input terminals. Assigning a function to the control input terminal preset to "Event-Trigger" cancels the "Event-Trigger" function, being replaced with the new function.
- COUT: Sets the functions to be assigned to the control output terminals.
- POWER OFF: Sets whether or not to save data of the volume level set in normal operation mode when the AC power supply is cut off.
- RS232C: Sets the RS-232C communication speed.
- MODULE: Displays or sets the module classification.
- PRIORITY: Sets priority order when multiple inputs with the same priority are broadcast.
- REMOTE: Sets the input and output channels for which the volume is remotely adjusted.
- EVENT: Sets the Event that is activated when the unit's power is turned on.
- VERSION: Displays the firmware version.
- MEMORY: Initializes memory.

[When the function is set to C-IN:]

Control input number selection

C - I N 0 1 – →   N O N E

Setting Range	01 – 04, 01 – 12 when C-001T is used (default: 01)

When the Down shift key is pressed with the control input function set to NONE and the cursor at the control input number, the Event number assigned to that control input number can be confirmed.
If no Event is assigned to that control input number, the NONE indication is displayed.

Event assignment display

C - I N 0 1   E V E N T   N O N E

When the displayed control input (C-IN01 in this example) is set to Trigger in the Event setting, the Event number is displayed.
If the control input is not set to Trigger, the NONE indication is displayed.
Assigning a function to the control input terminal preset to "Event-Trigger" cancels the "Event-Trigger" function, being replaced with the new function.

Control input function setting

C - I N 0 1 – →   N O N E

Setting Range	NONE (default), VOLUP (volume up), VOLDOWN (volume down), MUTE, POWER, EMG-MUTE (Cut-off by Emergency control)

Sets the functions to be assigned to the control input terminals.

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(When the control input function is set to VOLUP:)

```
C - I N 0 1 – →          V O L U P
```

(When the control input function is set to VOLDOWN:)

```
C - I N 0 1 – →          V O L D O W N
```

Assign the volume-up or volume-down function to the control input.
Closing the control input terminal increases or decreases the volume of the set input or output channel.

Channel number selection (VOLUP)

```
C - I N 0 1 – V O L U P  →  I N 1
```

Channel number selection (VOLDOWN)

```
C - I N 0 1 – V O L D W N →  I N 1
```

Using the Input channel or Output channel selection key, select the channel number for which you want to change the volume.
One control input can change one input or output channel volume.
You can change the sound volume for a channel even with the channel off, but not adjust it while monitoring the sound.

Setting Range	IN1 – 8 (default: IN1)

Volume increasing level setting (VOLUP)

```
C - I N 0 1 – V O L U P          0.5
```

Volume decreasing level setting (VOLDOWN)

```
C - I N 0 1 – V O L D W N          0.5
```

Set the volume level (dB) to increase or decrease.

Setting Range	0.5 – 10.0 dB (default: 0.5)

(When the control input function is set to MUTE:)

```
C - I N 0 1 – →          M U T E
```

Assign the function that mutes the input or output channel to the control input.
Closing the control input terminal mutes the set channel.
An input channel, when muted while in use, occupies the routed output, causing the Event-activated broadcast by the input channel with lower priority not to go through to the same output channel.

Channel number selection (MUTE)

```
C - I N 0 1 – M U T E   I N 1
```

Using the Input channel or Output channel selection key, select the channel number to be muted.
One control input can mute one input or output channel.

Setting Range	IN1 – 8, OUT1 – 2, Max. OUT8 when T-001Ts are added (default: IN1)

Interlock output control setting (MUTE)

```
C - I N 0 1 – S Y N C     O F F
```

Perform ON/OFF setting for the function that closes the control output terminal in synchronization with the control input terminal closure of the set number.

Setting Range	ON, OFF (default)

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Interlock output terminal setting (MUTE)

```
C - I N 0 1 – C O U T 0 1
```

This screen is displayed only when the interlock output control setting is set to ON.
Set the control output terminal which is closed in synchronization with the control input of the set number.
Setting the control output terminal that has been already set as interlock output terminal in the Event setting cancels the former Event-interlocked output.

Setting Range	COUT01 – 04, C-OUT01 – 12 when C-001T is used (default: COUT01)
	Note: When the interlock output control ON/OFF setting is ON.

(When the control input function is set to POWER:)

```
C - I N 0 1 – >        P O W E R
```

Assign the power ON/OFF function to the control input.
Power turns on when the control input terminal is closed, and turns off when the control input terminal is opened.

(When the control input function is set to EMG-MUTE:)

```
C - I N 0 1 – >   E M G - M U T E
```

Assign the function that simultaneously mutes all output channels to the control input. Closing the control input terminal mutes all output channels.
This function is used to mute the output provided from the unit during emergency broadcast operation.

Interlock output control setting (EMG-MUTE)

```
C - I N 0 1 – S Y N C    O F F
```

Perform ON/OFF setting for the function that closes the control output terminal in synchronization with the control input terminal closure of the set number.

Setting Range	ON, OFF (default)

Interlock output terminal setting (EMG-MUTE)

```
C - I N 0 1 – C O U T 0 1
```

This screen is displayed only when the interlock output control setting is set to ON.
Set the control output terminal which is closed in synchronization with the control input of the set number.
Setting the control output terminal that has been already set as interlock output terminal in the Event setting cancels the former Event-interlocked output.

Setting Range	COUT01 – 04, C-OUT01 – 12 when C-001T is used (default: COUT01)
	Note: When the interlock output control ON/OFF setting is ON.

[When the function is set to C-OUT:]

Control output number selection

C - O U T **0 1** ⇗   N O N E

Setting Range	01 – 04, 01 – 12 when C-001T is used (default: 01)

When the Down shift key is pressed with the control output function set to NONE and the cursor at the control input number, the Event number assigned to that control output number can be confirmed.
If no Event is set to that control output number, the NONE indication (nothing assigned) is displayed.

Interlock output control display

C - O U T 0 1   E V E N T   N O N E

When the displayed control output (C-OUT01 in this example) is designated as interlock output in the Event setting, its Event number is displayed. At this time, assigning the control function of "POWER" to this control output terminal cancels the Event-interlocked output.
If not designated as interlock output, the NONE indication is displayed in the place of the Event number.

Control output function selection

C - O U T 0 1 ⇗   N O N E

Sets the functions to be assigned to the control output terminals.

Setting Range	NONE (default), POWER

(When the control output function is set to POWER:)

C - O U T 0 1 ⇗   P O W E R

Turning on the power switch closes the control output terminal.

[When the function is set to POWEROFF:]

Memory erasure or storage setting

P O W E R O F F – ⇗ D E L

Set whether or not to save data of the volume level set in normal operation status when the AC power supply is cut off.

Setting Range	DEL (default), SAVE

• DEL: Data not saved.
• SAVE: Saves data.

This setting is for the case when the AC power supply is cut off.
When turned off using the unit's front-mounted power switch, the unit automatically saves the data of all the set volume levels.

[When the function is set to RS232C:]

Communication speed (bps) setting

S E R I A L   S P E E D =   5 7.6

Setting Range	9.6 k, 19.2 k, 38.4 k, 57.6 k (default), 115.2 k

[When the function is set to MODULE:]

Slot number selection and 900 series module classification setting

S L O T 1 = O T H E R S

Setting Range	Slot Number	1 – 8 (default: 1)
	Module Classification	OTHERS (default), B-01, B-11, B-21, B-41, E-03, E-04, E-05, E-06, E-07, L-01, L-11, L-41, M-01, M-03, M-11, M-21, M-41, M-51, M-61, S-01, S-02, S-04, T-01, T-02, T-12, U-01, U-03, U-11, U-12, U-13, U-14, U-21, U-43, U-61, V-01, ML-11T

Use the Left and Right shift keys to move the setting items on the screen.
For slots equipped with 9000 Series plug-in modules, their module model numbers are automatically displayed and cannot be changed. For slots equipped with 900 Series input modules, select their model numbers using the Parameter setting knob.
The settings performed here are merely displayed, and have no effect on the audio input and other settings.

[When the function is set to PRIORITY:]

Priority setting

P R I O R I T Y ⇒ F I F O

Set priorities when multiple inputs with the same priority level are simultaneously broadcast.

Setting Range	FIFO (default), LIFO, MIX

- FIFO: Input that comes first is broadcast.
- LIFO: The most recent input is broadcast.
- MIX: All inputs are mixed and broadcast.

[When the function is set to REMOTE:]

Remote volume control channel setting

R E M O T E 1 ⇒ O U T P U T 1

Set the input or output channels for which the volume is remotely adjusted by way of the unit's rear panel-mounted control I/O connection terminal.
The indication REMOTE 1 refers to the REMT VOL 1 terminal of the control I/O connection terminal, while the indication REMOTE 2 represents the REMT VOL 2 terminal.
Use the Left and Right shift keys to move the setting items on the screen.

Setting Range	Remote Volume Terminal Number	REMOTE 1, REMOTE 2
	Remote Volume Control Channel	OFF, INPUT1 – 8, OUTPUT1 – 2, Max. OUTPUT8 when T-001T is used (default for REMOTE1: OUTPUT1, REMOTE2: OUTPUT2)

[When the function is set to EVENT:]

Setting the Event to be recalled when power is switched on

> **POWERON‑EVENT⇒LAST**

Setting Range	LAST (default), 01 – 32 (only for Events set for ROUTE or BASE)

Set the Event number to be activated when the unit's power is switched on.
Since no trigger is provided for Event activation at power-on, select the Event number that corresponds to either the BGM Event or the BASE Event (with [＊] mark suffixed to its Event number), both set in the ROUTE Event setting.
When LAST is selected, the unit returns to the state before power-off when turned on.
The unit operation depends on the trigger condition at power-on when there was an Event (interrupt broadcast) or function (mute or emergency mute) being activated by a level trigger before power-off.

[When the function is set to VERSION:]

Firmware version indication

> **FIRM VERSION = 1.1 0**

Displays the firmware version number.

[When the function is set to MEMORY:]

Memory initialization

> **INITIALIZE OK?**

Pressing the Enter key initializes all of the unit's current settings to default settings.
To cancel initialization, press the Left shift key or Escape/Back key to revert back to the previous screen.

12.8. Adjustment Mode Setting
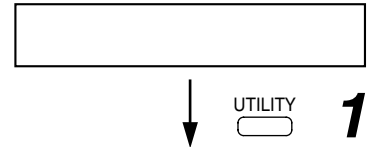
12.8.1. Settings in adjustment mode

In the adjustment mode, audio setting parameters can be set while monitoring the output sound. Input and output gain settings, input sound source equalization*, and sound equalization for individual output zones can be performed.
Since the setting parameters are individually adjusted for each Event, perform Event settings in advance.

* Input sound source equalization can be performed only for channels equipped with the D-001T module.

The adjustment procedure is described here using an example when paging is made in Event 2 during BGM broadcast in Event 1.
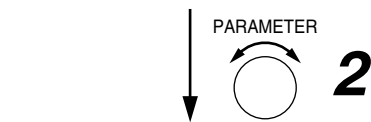
Step 1. Hold down the Utility menu key for 2 seconds or more in normal operation state.
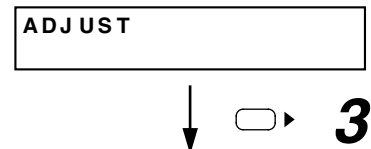The setting screen is displayed.

Step 2. Select ADJUST with the Parameter setting knob.
The screen is switched to the adjustment mode.
Note
In the adjustment mode, the Event selected in normal operation state continues to be broadcast.

Step 3. Press the Right shift key.
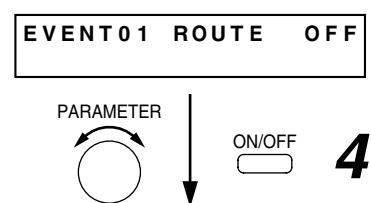The Event selection screen is displayed.

Step 4. Using the Parameter setting knob, select the Event number, then set the selected Event to ON by pressing the Input channel ON/OFF key.
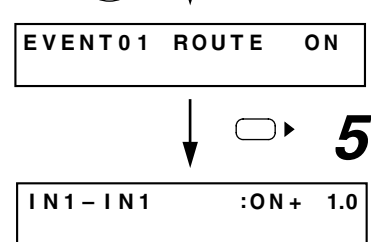**Note**
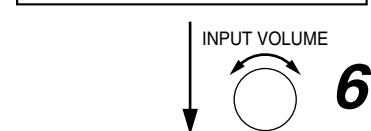The Event alternates between ON and OFF each time the Input channel ON/OFF key is pressed.
Setting ON immediately activates the selected Event, and OFF terminates it.

Step 5. Press the Right shift key.
The input gain setting screen is displayed.
To stop the audio output temporarily, press the input channel ON/OFF key.

Step 6. Adjust the gain with the Input volume control.

Step 7. Press the Down shift key to display each input setting screen and adjust on-screen parameters with the Parameter setting knob.
When there are two or more setting items on the screen, select the items with the Left and Right keys.

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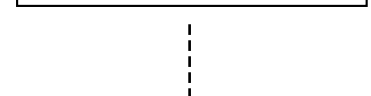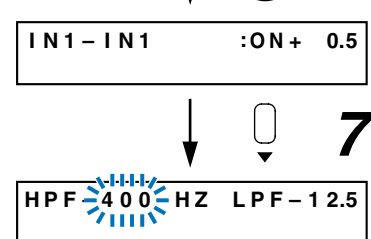
Step 8. Return to the input gain setting screen and press the Right shift key.
The output channel selection and gain setting screen is displayed.

Note
To stop the audio output temporarily, press the output channel ON/OFF key.

Step 9. Adjust the gain with the Output volume control.
In this event, pressing the Output channel selection key permits the output channel to be selected. When multiple output channels must be changed, select all of such output channels and adjust their output volume.

Step 10. Press the Down shift key to display each output setting screen and adjust on-screen parameters with the Parameter setting knob.
When there are two or more setting items on the screen, select the items with the Left and Right keys.

Step 11. Return to the output gain setting screen and press the Escape/Back key.
The display reverts to the Event number selection screen.

Step 12. Using the Parameter setting knob, select the Event number to be set next, then set the selected Event to ON by pressing the Input channel ON/OFF key.

Note
Multiple Events can be set to ON. Make their adjustments one by one.

Step 13. Repeat Steps 5 – 9 to adjust each parameter.

Step 14. After all adjustments are completed, press the Memory key to exit the adjustment mode.
The display reverts to normal operation state.

| IN1-IN1 :ON+ 1.0 |

↓ 🔲▶ **8**

| OUT1-OUT1 :ON+1 0.0 |

OUTPUT VOLUME
↓ **9**

| OUT1-OUT1 :ON+ 5.0 |

↓ **10**

| BASS+12 TREBLE-10 |

↓

| OUT1-OUT1 :ON+1 0.0 |

ESC/BACK **11**

| EVENT01 ROUTE ON |

PARAMETER **12**

| EVENT02 ROUTE OFF |

ON/OFF

| EVENT02 ROUTE ON |

ENTER **13**

| IN2-IN2 :ON+ 1.0 |

MEMORY **14**
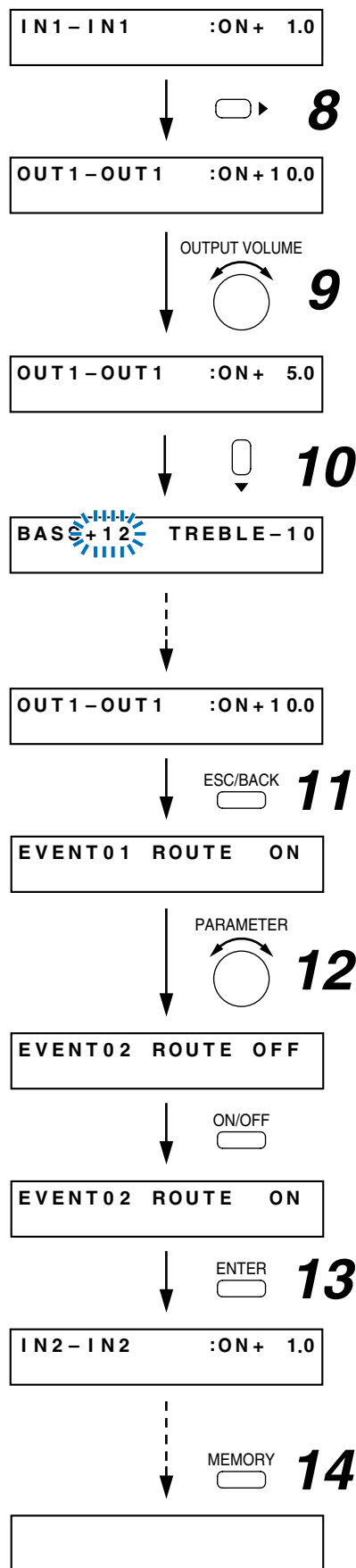
12.8.2. Adjustment mode setting flow chart

The screen display examples shown below may differ from actual displays.
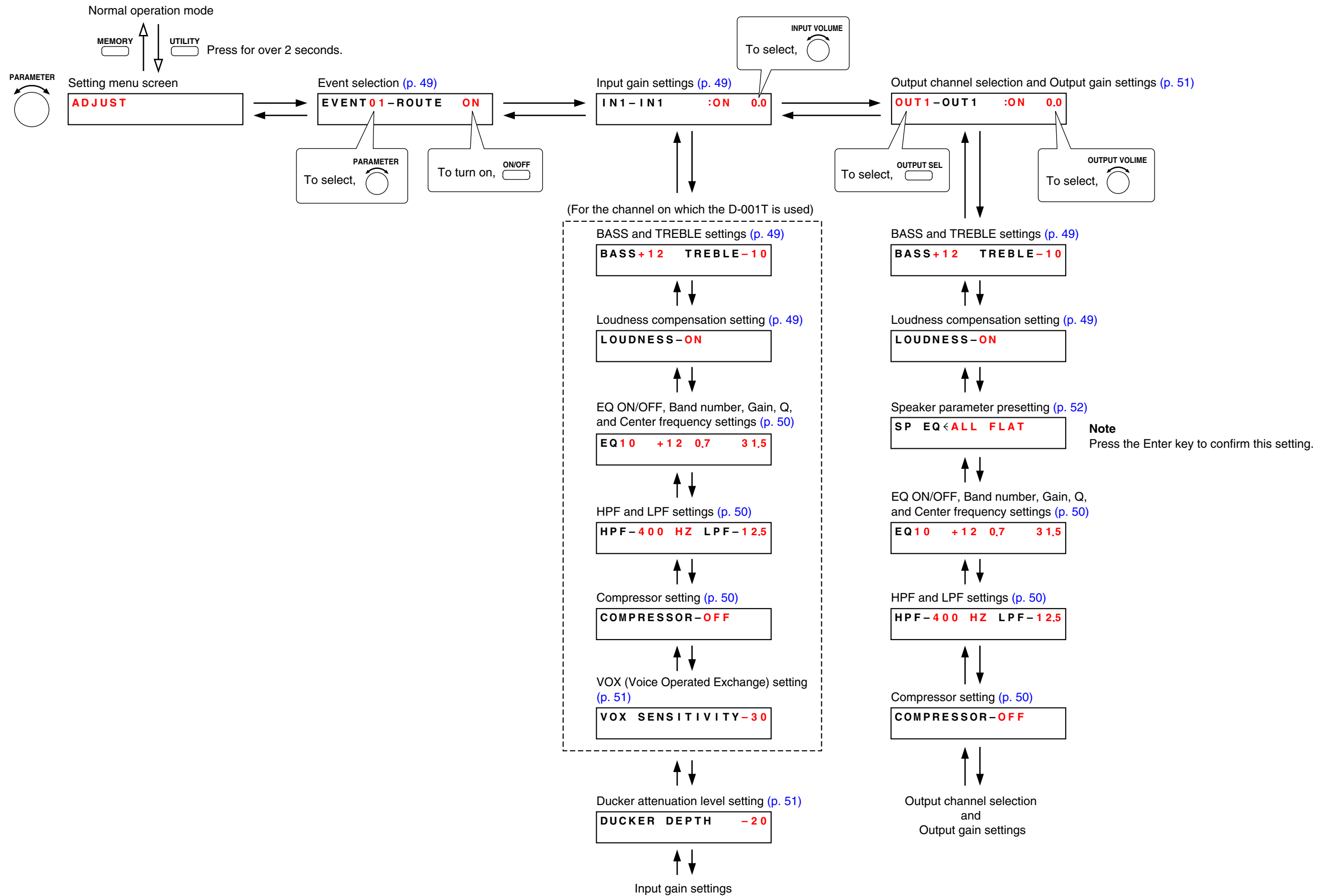The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
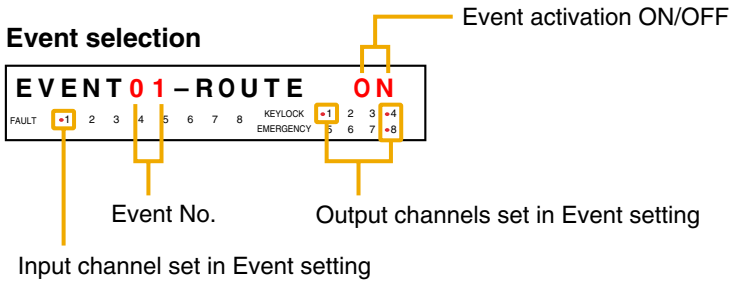ÇsThe indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.
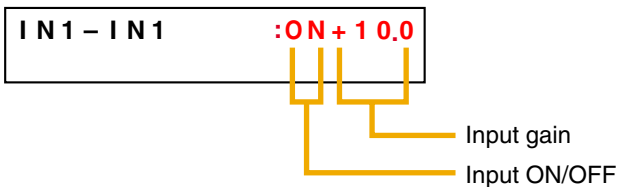
Normal operation mode

MEMORY   UTILITY   Press for over 2 seconds.

PARAMETER

INPUT VOLUME
To select,

Setting menu screen
`ADJUST`

Event selection (p. 49)
`EVENT01−ROUTE    ON`

PARAMETER
To select,

ON/OFF
To turn on,

Input gain settings (p. 49)
`IN1−IN1       :ON    0.0`

Output channel selection and Output gain settings (p. 51)
`OUT1−OUT1     :ON    0.0`

OUTPUT SEL
To select,

OUTPUT VOLIME
To select,

(For the channel on which the D-001T is used)

BASS and TREBLE settings (p. 49)
`BASS+12    TREBLE−10`

Loudness compensation setting (p. 49)
`LOUDNESS−ON`

EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (p. 50)
`EQ10    +12  0.7     31.5`

HPF and LPF settings (p. 50)
`HPF−400 HZ  LPF−12.5`

Compressor setting (p. 50)
`COMPRESSOR−OFF`

VOX (Voice Operated Exchange) setting (p. 51)
`VOX SENSITIVITY−30`

Ducker attenuation level setting (p. 51)
`DUCKER DEPTH     −20`

Input gain settings

BASS and TREBLE settings (p. 49)
`BASS+12    TREBLE−10`

Loudness compensation setting (p. 49)
`LOUDNESS−ON`

Speaker parameter presetting (p. 52)
`SP EQ‹ALL FLAT`

Note
Press the Enter key to confirm this setting.

EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (p. 50)
`EQ10    +12  0.7     31.5`

HPF and LPF settings (p. 50)
`HPF−400 HZ  LPF−12.5`

Compressor setting (p. 50)
`COMPRESSOR−OFF`

Output channel selection and Output gain settings

48

12.8.3. Adjustment mode setting items

Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Event selection

Event activation ON/OFF
Event No.
Output channels set in Event setting
Input channel set in Event setting

Rotate the Parameter setting knob to obtain the Event No. of which settings are desired to be adjusted.
The ON or OFF indication shows the corresponding Event activation status when the unit enters the Adjustment mode.
To adjust the Event's setting, turn the Event activation ON using the input channel ON/OFF key.
Select the Event here and press the Right shift key to make the Event-related adjustments.
You cannot activate the selected Event if the assigned input channel is off.

Input gain settings

Input gain
Input ON/OFF

Adjust the input gain with the input volume control.
To stop the sound output temporarily, press the input channel ON/OFF key.
The input channel, even when set to OFF here, automatically turns ON when the unit returns to the normal operation state.
For an input channel that the selected Event does not include, you can select it and make adjustments.

Setting Range	Input Channel Selection	1 – 8 (default: 1)
	Channel Control	ON (default), OFF
	Channel Gain	−∞, −70.0 dB to +10.0 dB (default: 0.0 dB), 0.5 dB steps

BASS and TREBLE settings (input/output)

Rotate the Parameter setting knob to set gains.
Press the Right or Left shift key to select BASS or TREBLE, of which gain value that flashes can be adjusted.

Setting Range	−12 dB to +12 dB (default: 0 dB) 1 dB step

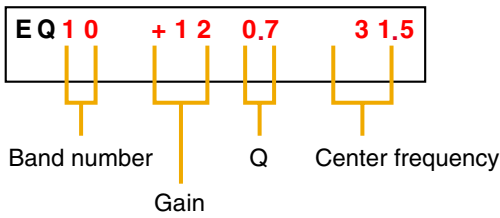**Loudness compensation setting (input/output)**

Rotate the Parameter setting knob to set the loudness compensation function ON/OFF.
Setting ON boosts low frequencies.
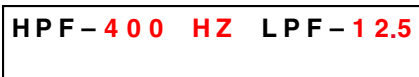
Setting Range	ON, OFF (default)

49

EQ ON/OFF, Band number, Gain, Q, and Center frequency settings (input/output)

```
E Q 1 0    + 1 2    0.7      3 1.5
```

Band number   Q   Center frequency

Gain

The indications on the right of "EQ" turn on and off as the Parameter setting knob is rotated.
When the indication is displayed, EQ is ON and a band number, gain, Q, and center frequency are displayed in this order from left to right. Use the Parameter setting knob to change each parameter, and the Left and Right keys to move the setting items.

Setting Range	EQ	ON, OFF (default)
	EQ Band Number	01 to 10 (default: 01)
	Gain	−12 dB to +12 dB (default: 0 dB), 1 dB steps
	Q	0.3, 0.5, 0.7, 1, 1.5 (default), 2, 3, 5
	Center Frequency	20, 25, 31.5 (default), 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1 k, 1.25 k, 1.6 k, 2 k, 2.5 k, 3.15 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz

HPF and LPF settings (input/output)

```
H P F – 4 0 0   H Z   L P F – 1 2.5
```

Rotate the Parameter setting knob to set the cut-off frequencies.
Press the Right or Left shift key to select HPF or LPF, of which parameter that flashes can be adjusted.

Setting Range	HPF (input/output)	OFF (default), 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400 Hz
	LPF (input/output)	OFF (default), 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 kHz

Compressor setting (input/output)

```
C O M P R E S S O R – O F F
```

Setting Range	OFF (default), 1, 2, 3, 4, 5

Use the compressor to prevent power amplifier overload or to produce more easily heard sound by averaging the audio level. The number shows the compressor's effectiveness level, which can be set by rotating the Parameter setting knob.

- 1 (Peak limiter)
  Provides a peak limiter function that protects amplifiers and speakers against damage caused by an excessive signal input.
  This level is suited to speech applications.

- 2 (Peak limiter)
  Provides a peak limiter function that protects amplifiers and speakers against damage caused by an excessive signal input.
  This level is suited to musical (vocals) applications.

- 3 (Sonic normalizer)
  Equalizes the sound volume of reproduced BGM among CDs or pieces of music by boosting small sounds and lowering big sounds, making the entire sound volume uniform.
  This level is suited to BGM reproduction.

- **4 (Speech leveler)**

 Makes paging calls easier to hear by equalizing the difference in speech signal volume that may result from individual differences in speaker voice volumes or variations in speaker-to-microphone distances.
 Since the volume is extensively corrected, the feedback margin narrows, making it liable to occurrences of feedback. Therefore, special care must be taken when installing microphones and speakers.
 This level is suited to microphone speech applications.

- **5 (Speech leveler)**

 Makes paging calls easier to hear by equalizing the difference in speech signal volume that may result from individual differences in speaker voice volumes or variations in speaker-to-microphone distances.
 This level 5 is more effective than level 4 described above. Since the volume is extensively corrected, the feedback margin narrows, making it liable to occurrences of feedback. Therefore, special care must be taken when installing microphones and speakers.
 This level is suited to microphone speech applications.

VOX (Voice Operated Exchange) setting

```
VOX  SENSITIVITY-30
```

Set the input signal level necessary for enabling the VOX function.

Setting Range	−40, −35, −30 (default), −25, −20, −15, −10, −5 dB

Ducker attenuation level setting

```
DUCKER  DEPTH      -20
```

Set how much the input signal for the channel given lower priority than that of the currently set input channel should be attenuated.

Setting Range	OFF, −50, −40, −30, −20 (default), −10, 0 dB

The minus figures in dB represent amount to attenuate input signals. The larger the minus figures, the larger the amount of attenuation. Selecting "OFF" sets the attenuation to infinity, while selecting "0" sets to no attenuation, permitting all input signals to be mixed and output.

Output channel selection and Output gain settings

```
OUT1-OUT1    :ON    0.0
```

Output gain

Output channel   Output ON/OFF
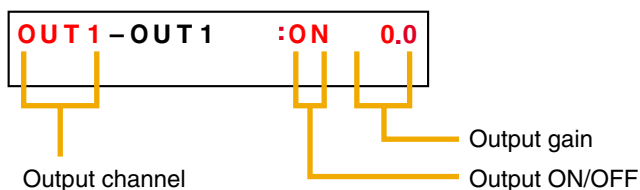
Select with the output channel selection key the output channel to be adjusted.
Adjust the sound volume with the output volume control.
To stop the sound output temporarily, press the output channel ON/OFF key.
The output channel, even when set to OFF here, automatically turns ON when the unit returns to the normal operation state.
You can adjust for two or more output channels by switching to each channel.
You can also adjust the output channel that the Event does not include.

Setting Range	Output Channel Selection	OUT1 – 2, Max. 8 when three T-001Ts are used (default: OUT1)
	Channel Control	ON (default), OFF
	Channel Gain	−∞, −70.0 dB to +10.0 dB (default: −20.0 dB), 0.5 dB steps

Speaker parameter presetting

```
SP EQ‹ALL FLAT
```

Optimum equalization can be automatically set depending on the type of speaker to be used.
If this function is not used or the speaker to be used is not included in a speaker list, set "SP EQ" to ALL FLAT. When the speaker type is selected from the speaker list, the number of bands that can be set on the next EQ setting screen decreases by the number of bands to be used in the setting performed on this screen. The number of bands to be used differs depending on the type of speaker.
To perform this setting, select the speaker model from the speaker list and press the Enter key to confirm.

Setting Range	ALL FLAT (default), F-122, F-122SUBWFER (F-122 with a subwoofer), H-1, H-1SUBWOOFER (H-1 with a subwoofer), H-2, H-2SUBWOOFER (H-2 with a subwoofer), H-3, H-3SUBWOOFER (H-3 with a subwoofer), HB-1, FB-100, SW FOR F-122 (subwoofer for F-122), SR-S4 SINGLE (SR-S4 driven by a single amplifier), HX-5_E, HX-5_E LOCUT (HX-5_E for low-cut), FB-120

[Speaker EQ settings]

	ALL FLAT (Default)		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01	0	31.5	1.5
EQ 02	0	63	1.5
EQ 03	0	125	1.5
EQ 04	0	250	1.5
EQ 05	0	500	1.5
EQ 06	0	1 k	1.5
EQ 07	0	2 k	1.5
EQ 08	0	5 k	1.5
EQ 09	0	8 k	1.5
EQ 10	0	16 k	1.5

	F-122			F-122SUBWFER[1]		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04 (HPF)	——	37.5	0.5	——	45	0.5
EQ 05 (HPF)	——	37.5	0.7	——	45	0.7
EQ 06	+11.5	85	2.871	+6.5	80	1.414
EQ 07	−2.5	212	0.667	−4.5	180	0.667
EQ 08	−8	900	2.871	−8	900	2.871
EQ 09	+8	10 k	0.267	+8	11.2 k	0.267
EQ 10 (LPF)	——	20 k	0.7	——	20 k	0.7

[1] F-122 with a subwoofer

	H-1			H-1SUBWOOFER[*2]		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04						
EQ 05						
EQ 06 (HPF)	——	118	0.707	——	118	0.707
EQ 07	+10	125	1.8	+4	125	1.8
EQ 08	−6.5	220	1.414	−6.5	220	1.414
EQ 09	+1.5	5 k	0.305	+1.5	5 k	0.305
EQ 10 (LPF)	——	15.8 k	0.5	——	15.8 k	0.5

*2 H-1 with a subwoofer

	H-2			H-2SUBWOOFER[*3]		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04						
EQ 05						
EQ 06 (HPF)	——	63	0.707	——	63	0.707
EQ 07	+10	100	1.871	+2.5	100	1.871
EQ 08	−5	200	1.414	−5	200	1.414
EQ 09	+1.5	5 k	0.305	+1.5	5 k	0.305
EQ 10 (LPF)	——	15.8 k	0.5	——	15.8 k	0.5

*3 H-2 with a subwoofer

	H-3			H-3SUBWOOFER[*4]		
	GAIN (dB)	FREQ (Hz)	Q	GAIN (dB)	FREQ (Hz)	Q
EQ 01	Settable EQ bands in the EQ setting screen			Settable EQ bands in the EQ setting screen		
EQ 02						
EQ 03						
EQ 04						
EQ 05						
EQ 06 (HPF)	——	63	0.707	——	63	0.707
EQ 07	+9	100	2.871	+5	100	2.871
EQ 08	−8	220	2.871	−8	220	2.871
EQ 09	+5	500	2.871	+5	500	2.871
EQ 10	+1.5	5 k	0.305	+1.5	5 k	0.305

*4 H-3 with a subwoofer

	HB-1		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03			
EQ 04	Settable EQ bands in the EQ setting screen		
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	40	1
EQ 10 (LPF)	——	100	1

	FB-100		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03			
EQ 04	Settable EQ bands in the EQ setting screen		
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	40	1
EQ 10 (LPF)	——	100	1

	SW FOR F-122[5]		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03			
EQ 04	Settable EQ bands in the EQ setting screen		
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (LPF)	——	100	0.5
EQ 10	+2.5	112	0.667

[5] Subwoofer for F-122

	SR-S4 SINGLE[6]		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03			
EQ 04	Settable EQ bands in the EQ setting screen		
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	60	1.226
EQ 10	+5	16 k	1.414

[6] SR-S4 driven by a single amplifier

	HX-5_E[7]		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03	Settable EQ bands in the EQ setting screen		
EQ 04			
EQ 05			
EQ 06 (HPF)	——	60	2.053
EQ 07	+2	65	1.414
EQ 08	−3	800	0.7
EQ 09	−4	2.5 k	2.997
EQ 10	+5	5 k	0.305

[7] HX-5 Series

	HX-5_E LOCUT[8]		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03	Settable EQ bands in the EQ setting screen		
EQ 04			
EQ 05			
EQ 06			
EQ 07 (HPF)	——	90	1.30656
EQ 08	−3	800	0.7
EQ 09	−4	2.5 k	2.997
EQ 10	+5	5 k	0.305

[8] HX-5 Series for low-cut use

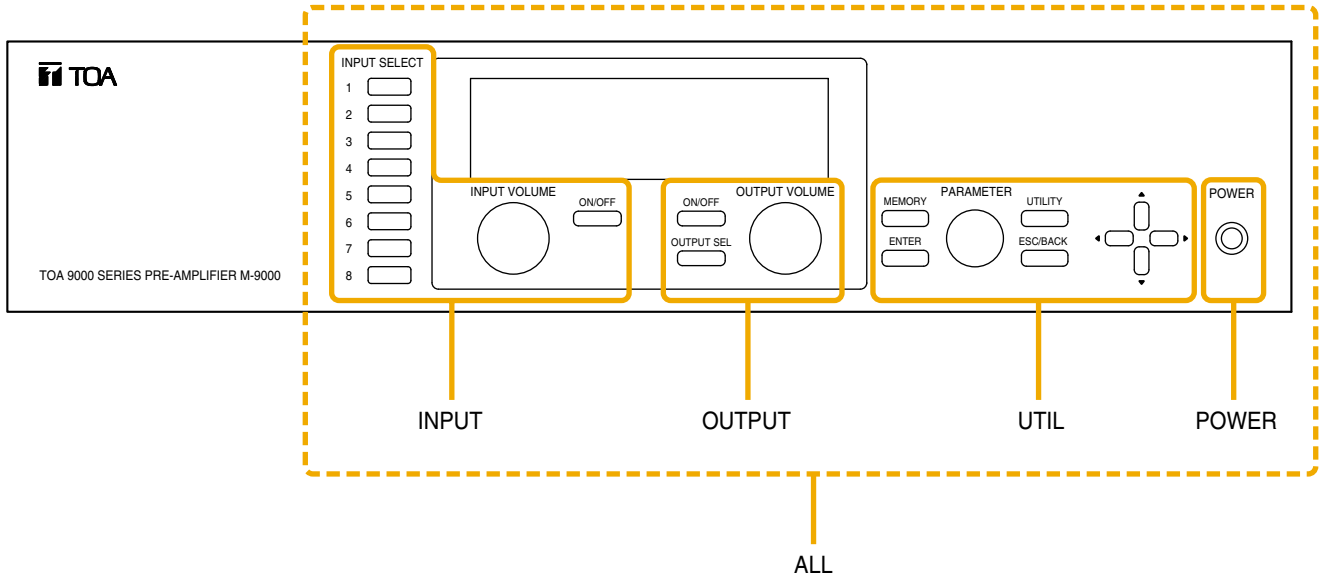|	FB-120[9]		
	GAIN (dB)	FREQ (Hz)	Q
EQ 01			
EQ 02			
EQ 03	Settable EQ bands in the EQ setting screen		
EQ 04			
EQ 05			
EQ 06			
EQ 07			
EQ 08			
EQ 09 (HPF)	——	40	2.053
EQ 10 (LPF)	——	100	1

[9] FB-120 Series

12.9. Key Lock Function Setting

The key lock function prevents equipment malfunctions by disabling operation of each key.

12.9.1. Keys that can be locked

This figure represents the M-9000.

ALL: Locks all keys simultaneously.

INPUT: Locks the Input channel selection keys, Input volume control, and Input channel ON/OFF key.
It is also possible to individually set whether or not to lock for each channel.

OUTPUT: Locks the Output channel selection key, Output volume control, and Output channel ON/OFF key.
It is also possible to individually set whether or not to lock for each channel.

UTIL: Locks the Utility menu key, Memory key, Enter key, Escape/Back key, and Parameter setting knob.

POWER: Locks the Power switch.

12.9.2. Key lock function setting flow chart

The screen display examples shown below may differ from actual displays.
The on-screen indications shown in red here (actually shown by flashing cursors) are parameters or setting contents to be selected with the Parameter setting knob, input channel selection key or other designated keys.
The indications of the [↑], [↓], [←], and [→] arrows represent that the screen is switched with the Screen shift key.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Normal operation mode

MEMORY   UTILITY

Press for over 2 seconds.

PARAMETER

Setting menu screen
`KEYLOCK`

Lock status display (p. 58)
`KEYLOCK⇒UNLOCKED`

ENTER
ESC/BACK

All-key lock ON/OFF (p. 58)
`KEYLOCK ALL    OFF`

Password setting (p. 58)
`SETPASSWORD   ⇒____`

Input key lock ON/OFF (p. 58)
`KEYLOCK INPUT  OFF`

Input channel selection key lock ON/OFF (p. 58)
`KEYLOCK INPUT1 OFF`

PARAMETER
selects an input channel.

ON/OFF
turns the input channel on or off.

Output key lock ON/OFF (p. 58)
`KEYLOCK OUTPUT  OFF`

Output channel selection key lock ON/OFF (p. 59)
`KEYLOCKOUTPUT1 OFF`

PARAMETER
selects an output channel.

ON/OFF
turns the output channel on or off.

Setting key lock ON/OFF (p. 59)
`KEYLOCK  UTIL   OFF`

Power switch lock ON/OFF (p. 59)
`KEYLOCK POWER   OFF`

All-key lock ON/OFF
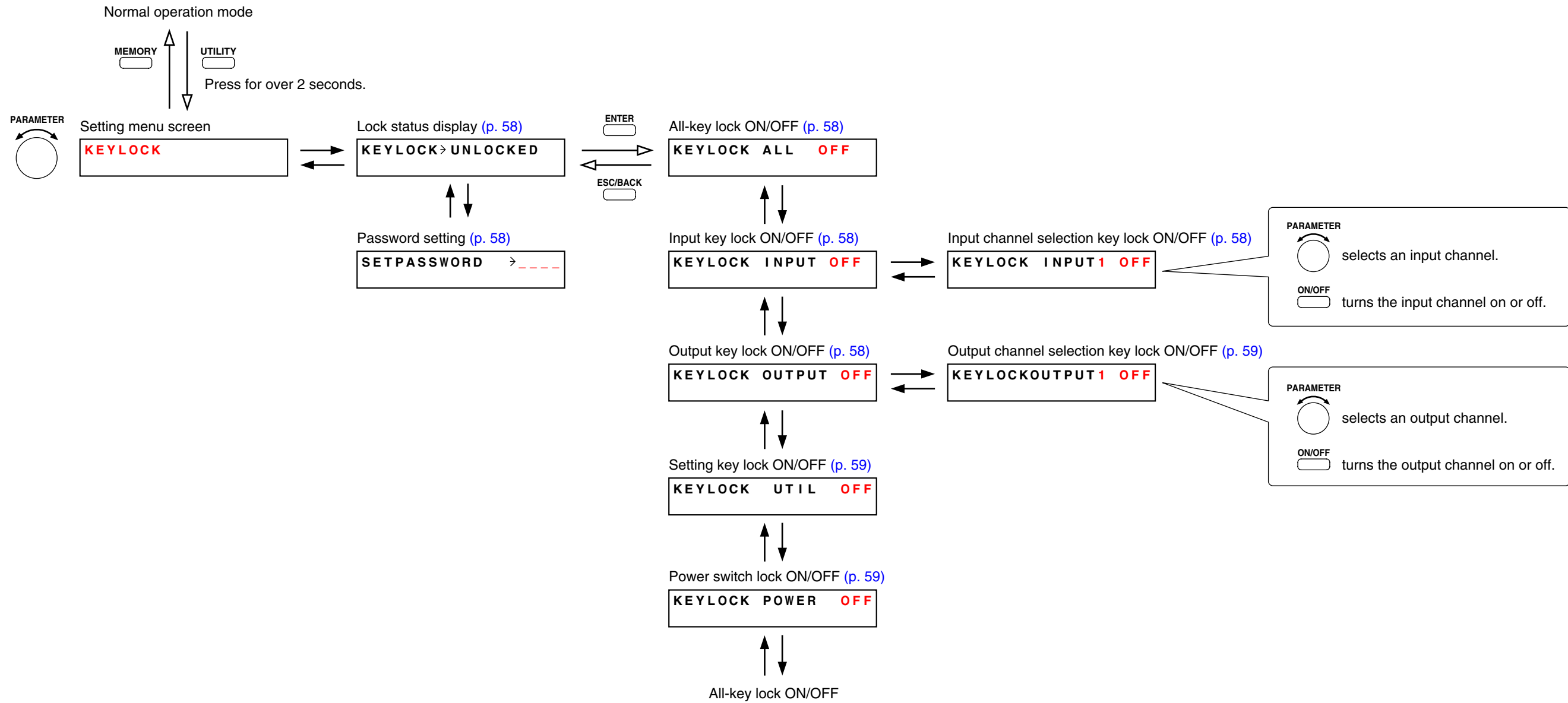
12.9.3. Key lock function setting items

Set the keys to be locked on the key lock function setting screen. The KEYLOCK indication lights after setting completion. Since a password is requested if the locked key is pressed, enter the password.
Unless otherwise specified, use the Parameter setting knob for each parameter selection.

Lock status display

(No key is locked.)   **(Any key except the Utility key is locked.)**

| **KEYLOCK ⇒ UNLOCKED** | | **KEYLOCK ⇒ LOCKED** |

Pressing the Enter key gives access to each key lock setting screen.

Password setting

| **SETPASSWORD   ⇒ _ _ _ _** |

Passwords can be set only when the keys are not locked.
Use the Input channel selection key to set the password and use the Left and Right shift keys to move characters.

All-key lock ON/OFF

| **KEYLOCK ALL   OFF** |

Selecting ON locks all keys located on the front panel.
If ON/OFF settings differ from key to key, the [- - -] indication is displayed when this screen appears.

Input key lock ON/OFF

| **KEYLOCK INPUT OFF** |

Locks all Input channel selection keys, Input channel ON/OFF key, and Input volume control.
If ON/OFF settings differ from channel to channel, the [- - -] indication is displayed when this screen appears.

Input channel selection key lock ON/OFF

| **KEYLOCK INPUT1 OFF** |

Locks the Input channel selection key, Input channel ON/OFF key, and Input volume control for each input channel.
Select with the Parameter setting knob the input channel to be locked, and set the key lock function to ON with the Input channel ON/OFF key.

Output key lock ON/OFF

| **KEYLOCK OUTPUT OFF** |

Locks all Output channel selection keys, Output channel ON/OFF key, and Output volume control.
If ON/OFF settings differ from channel to channel, the [- - -] indication is displayed when this screen appears.

Output channel selection key lock ON/OFF

```
KEYLOCKOUTPUT1  OFF
```

Locks the Output channel selection key, Output channel ON/OFF key, and Output volume control for each Output channel.
Select with the Parameter setting knob the Output channel to be locked, and set the key lock function to ON with the Output channel ON/OFF key.
The Output channel selection key selects an output channel one by one only in numerical order starting from Channel 1. So, when the output channel selection key is locked at an output channel, the subsequent output channels are not used unless the locked key is unlocked at the channel by entering a password.

Setting key lock ON/OFF

```
KEYLOCK   UTIL    OFF
```

Selecting ON locks Utility key, Memory key, Enter key, Escape/Back key, and Parameter setting knob.

Power switch lock ON/OFF

```
KEYLOCK  POWER    OFF
```

Locks the Power switch.
Setting this function disables the power switch to be turned off when the unit's power is on. (Power can be turned on whenever the unit is off irrespective of the power switch lock ON/OFF status.)
To power off the unit, perform the remote control or turn the power switch off in the normal operation mode after setting the power switch lock function to OFF here and exiting the function setting mode.

12.9.4. Password setting

When using a password, set the password before performing lock setting for each key.

Step 1. Hold down the Utility menu key for 2 seconds or more in normal operation state.
The setting screen is displayed.

Step 2. Select KEYLOCK with the Parameter setting knob.

Step 3. Press the Right shift key.
Lock status is displayed.

Step 4. Press the Down shift key.
The Password setting screen is displayed.

> **Note**
> No password is factory-preset.
> (The [_ _ _ _] indication is displayed.)

Step 5. Enter a password using the Input channel selection keys (1 – 8).
The [-] indication on the extreme left flashes first for character entry.
Entering a character changes the [-] indication into [✳].
Use up to 4 characters to set the password.

Step 6. Press the Up shift key after setting completion.
The display returns to the key lock status screen.

Step 7. Perform key lock setting.
Advance to Step 4 on the next page.

UTILITY **1**

`INPUT–SETTIG`

PARAMETER **2**

`KEYLOCK`

3

`KEYLOCK⇒UNLOCKED`

4

`SETPASSWORD    _ _`

INPUT SELECT 2 **5**

`SETPASSWORD    ✳ _ _`

`SETPASSWORD  ⇒ _ _`

`SETPASSWORD  ⇒ ✳✳ ✳`

6

`KEYLOCK⇒UNLOCKED`

60
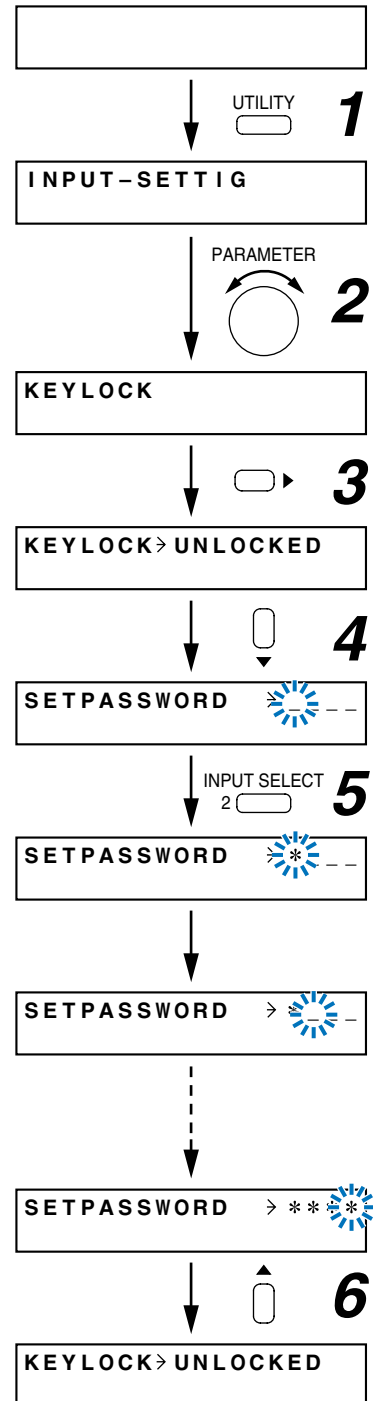
12.9.5. Key lock setting operation

Step 1. Hold down the Utility menu key for 2 seconds or more in normal operation state.
The setting screen is displayed.

Step 2. Select KEYLOCK with the Parameter setting knob.

Step 3. Press the Right shift key.
Lock status is displayed.

Step 4. Press the Enter key.
The all-key lock ON/OFF setting screen is displayed.

Step 5. Set keys to be locked.

   5-1. All-key lock setting
   Set "KEYLOCK ALL" function to ON with the Parameter setting knob.

   5-2. Selected key(s) lock setting
   Press the Shift key to display individual setting screen for each key, and perform the ON/OFF setting with the Parameter setting knob.
   You can set each input or output channel key to ON or OFF by selecting it on the screen.

   Note
   The setting flow on the right is an example for locking the input channel 1 key.

Step 6. Press the shift key to return to the all-key lock setting screen after setting completion, then press the Escape/Back key.

Step 7. Press the Left shift key.
The display returns to the setting menu screen.

Step 8. Press the Memory key.
The display returns to the normal operation state, making the key lock setting valid.

61
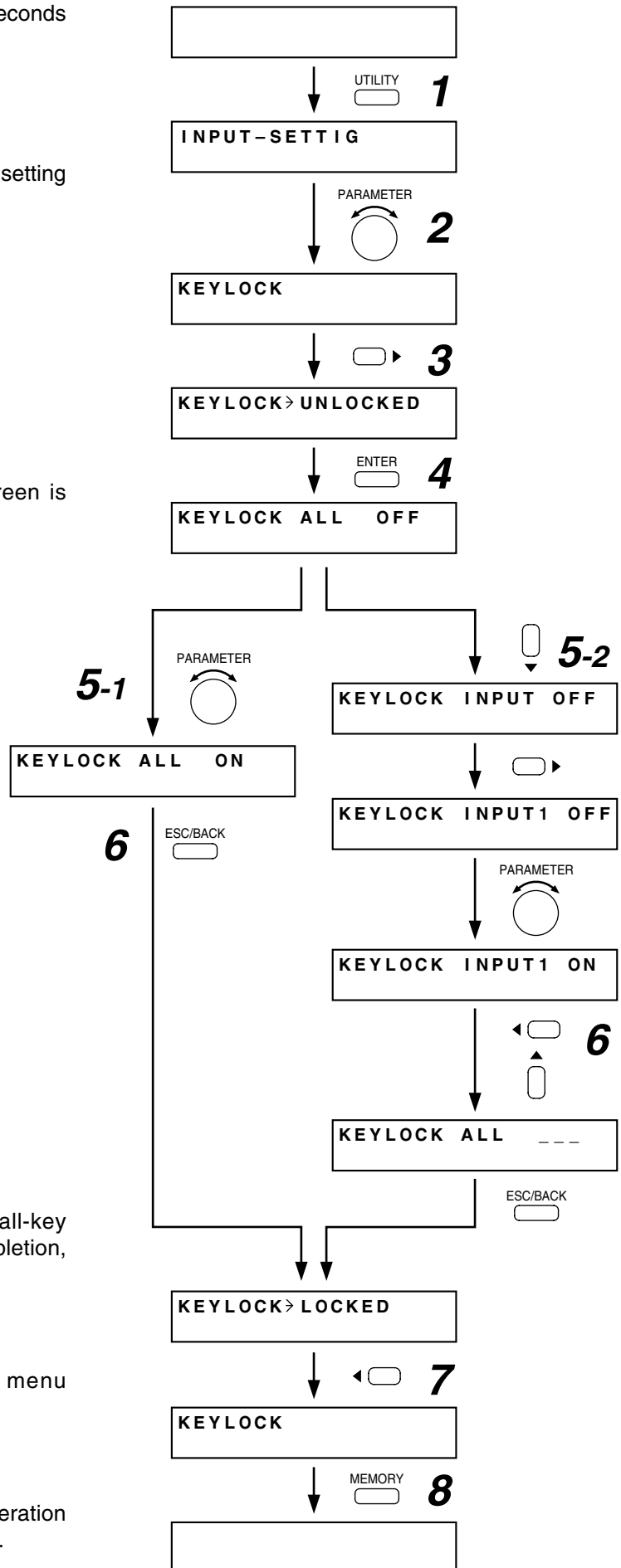
13. RESTORING FACTORY DEFAULT SETTING

Follow the procedures below to return all settings to default values while using the unit in the matrix mode. Details of the default values are shown on the next page, "Default Setting Table."

Step 1. Hold down the Utility menu key for 2 seconds or more when in normal operation mode.

Step 2. Using the Parameter setting knob, select UTILITY SETTING, then press the Right shift key.

Step 3. Using the Parameter setting knob or UP/Down shift key, select MEMORY, then press the Right shift key.

Step 4. Press the Enter key when the "INITIALIZE OK?" indication is displayed.

To cancel initialization, press the Left shift key or Escape/Back key to revert back to the previous screen.

Normal operation mode

1   UTILITY

Setting menu screen

I N P U T – S E T T I N G

2   PARAMETER

U T I L I T Y – S E T T I N G

U T I L I T Y   C - I N

3   PARAMETER   or

U T I L I T Y   M E M O R Y

I N I T I A L I Z E   O K ?

4   ENTER
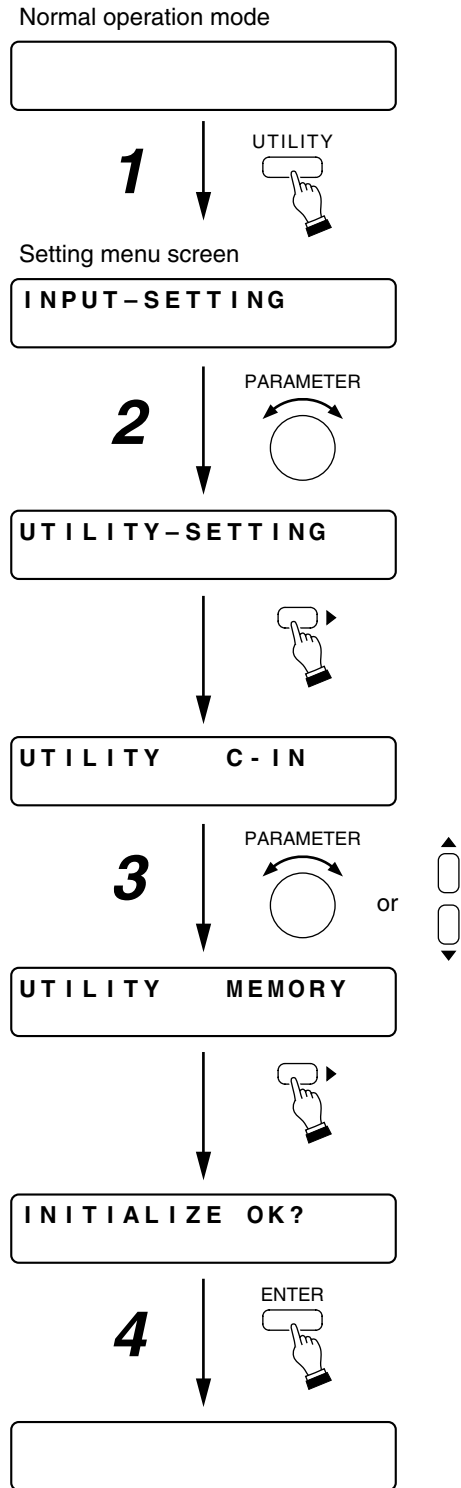
13.1. Default Setting Table

13.1.1. Audio input settings

Setting Item	Default
Priority	8 (7 only when ZP-001T is used)
Ducker	OFF
Input Channel Name	(IN1 – 8)

[Settings when the ZP-001T is used]

Pre-paging Tone	OFF
Output Format	OUTPUT SELECT
Operation Mode	PAGING PORT

[Settings when the D-001T is used]

Input Sensitivity	−10 dB
Phantom Power	OFF
VOX Function	OFF

13.1.2. Audio output settings

Setting Item	Default
Output Channel Name	(OUT1 – 8)

13.1.3. Event settings

Setting Item	Default
Event Number	01
Event Classification	NONE

[When Event classification is set to ROUTE]

Input Channel	01
Output Channel	OUT1
Trigger	NONE
Interlock Output Control	OFF
Interlock Output	COUT01 (When the interlock output control is ON)

[When Event classification is set to BGMEND]

Trigger	C-IN01

[When Event classification is set to BASE]

Event Number	01
Trigger	C-IN01

13.1.4. Utility settings

Setting Item	Default
Function Selection	C-IN

[When the function selection is set to C-IN]

Control Input Number	01
Control Input Function Selection	NONE
Channel Number	IN1
Volume Up/Down Level	0.5
Interlock Output Control	OFF
Interlock Output Terminal	COUT01 (When the interlock output control is ON)

[When the function selection is set to C-OUT]

Control Output Number	01
Control Output Function Selection	NONE

[When the function selection is set to POWEROFF]

Memory Storage at Power-Off	DEL

[When the function selection is set to RS232C]

Communication Speed (bps)	57.6k

[When the function selection is set to MODULE]

Slot Number	1
Module Classification	OTHERS

[When the function selection is set to PRIORITY]

Priority	FIFO

[When the function selection is set to REMOTE]

Remote Volume Control Channel	REMOTE1 terminal for OUTPUT1 control, REMOTE2 terminal for OUTPUT2 control

[When the function selection is set to EVENT]

Event Activation at Power-On	LAST

13.1.5. Adjustment mode settings

Input Channel Settings

Setting Item	Default
Input Channel Selection	IN1
Channel Control	ON
Channel Gain	0.0 dB
Ducker Attenuation Level	−20 dB

[Settings when the D-001T is used]

BASS/TREBLE	0 dB
Loudness Compensation	OFF
EQ	OFF
EQ Band Number	01 (When EQ = ON and EQ band number = 01)
Gain	0 dB (When EQ = ON and EQ band number = 01)
Q	1.5 (When EQ = ON and EQ band number = 01)
Center Frequency	31.5 Hz (When EQ = ON and EQ band number = 01)
HPF	OFF
LPF	OFF
Compressor	OFF
VOX Sensitivity	−30 dB

Output Channel Settings

Output Channel Selection	OUT1
Channel Control	ON
Channel Gain	−20.0 dB
BASS/TREBLE	0 dB
Loudness Compensation	OFF
Speaker Parameter Presetting	ALL FLAT
EQ	OFF
EQ Band Number	01 (When EQ = ON and EQ band number = 01)
Gain	0 dB (When EQ = ON and EQ band number = 01)
Q	1.5 (When EQ = ON and EQ band number = 01)
Center Frequency	31.5 Hz (When EQ = ON and EQ band number = 01)
HPF	OFF
LPF	OFF
Compressor	OFF

14. MODULE INSTALLATION

> **Important** Be sure to detach the power cord when inserting or removing any module.

14.1. Module Combination

The unit is designed to provide an up to 8-input/8-output configuration in combination with its optional modules.
Inputs are configured by only using the modules. (No input terminals are located on the rear panel.)
For outputs, 2 output channels are provided on the rear panel and can be expanded by adding modules.
There are 4 control inputs and 4 control outputs on the rear panel, which can be expanded to a maximum of 12 inputs and 12 outputs with the additional use of 1 module.
900 Series input modules can also be used together with 9000 Series modules.

9000 series modules		No. of inputs	Maximum mountable No.
Model No.	Module function		
D-001T	2-channel Mic/Line input	2	4
ZP-001T	Zone paging input	1	1
T-001T	2-channel output	——	3
C-001T	Remote control	——	1

900 series modules	No. of inputs	Maximum mountable No.
	1	8

14.2. Channel Numbers and Terminal Numbers

• Input channel numbers 1, 2, 3... begin with the input(s) of the module inserted into Slot No. 1.

• Output channels 1 and 2 correspond to the unit's rear panel-mounted preamplifier output terminals 1 and 2, respectively. When output modules are added, the output channel numbers are 3, 4, 5....beginning with the output of the module inserted into Slot 5.

• Control input and output terminal numbers correspond to control input and output terminals 1 – 4 on the unit's rear panel. When a C-001T module is added, the additional terminal numbers are from 5 to 12.

14.3. Module Installation

The unit's rear panel-mounted module slot numbers are 1 – 8 from right to left as viewed from the rear.
There are rules for module installation. Follow the procedures below to mount the modules.

Notes
• Avoid touching parts and terminals on the module's circuit board when inserting or removing the module.

• Mount the module in the right place and certainly secure it with screws.

Step 1. Insert the D-001T module into the slots, starting in order from Slot 1 without leaving slots open in between.

> **Note**
> Only Slots 1 – 4 can be used for the D-001T module.

8	7	6	5	4	3	2	Slot 1
				←			D-001T
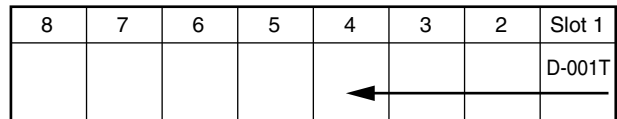
Step 2. Insert the T-001T module into the slots, starting in order from Slot 5 without leaving slots open in between.

> **Note**
> Only Slots 5 – 7 can be used for the T-001T module.

8	7	6	5	4	3	2	Slot 1
	←		T-001T				

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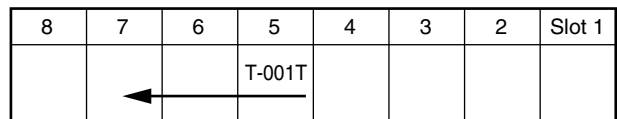
Step 3. Insert the ZP-001T module(s) into the slots in order without leaving slots open in between.

8	– –	Slot 1
		ZP-001T ←	D-001T is mounted

(Example when no D-001T is mounted)

8	7	6	5	4	3	2	Slot 1
						ZP-001T ←	
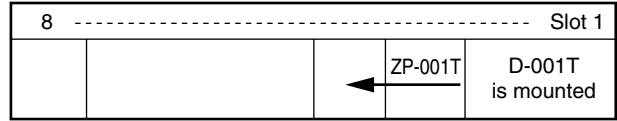
Note
Start the insertion from Slot No. 1 when no D-001T module is used.

Step 4. Insert the 900 Series input modules.

(Example when the T-001T is mounted in an intermediate position)

8	7	6	5	4	– – – – – – – –	Slot 1
		900 module	T-001T	900 module	Module is mounted	
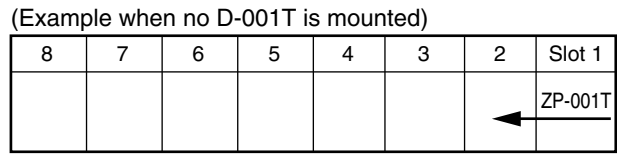
Notes
- When Slot No. 1 is occupied with the D-001T, Slot No. 8 is not used for the 900 Series module. Likewise, when Slot No. 2 is occupied, Slot No. 7 is not used; when Slot No. 3 is occupied, Slot No. 6 is not used; and when Slot No. 4 is occupied, Slot No. 5 is not used.

(Example when no D-001T and ZP-001T are mounted)

8	7	6	5	4	3	2	Slot 1
						900 module ←	

- Insert the 900 Series input modules in order without leaving slots open in between.
- Use the open slots in increasing slot number order even if the T-001T module is mounted in an intermediate position.
- Insert modules into the slots, starting in order from Slot No. 1 when not mounting the D-001T and ZP-001T.
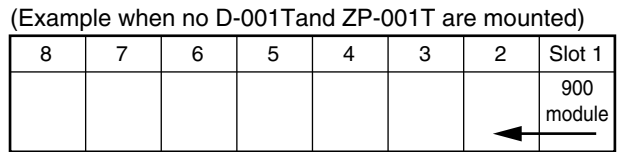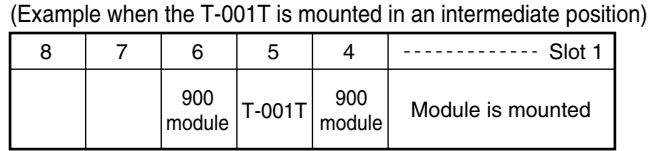
Step 5. Insert the C-001T module in the open slot with the lowest slot number.

8	– –	Slot 1
	C-001T	Module is mounted
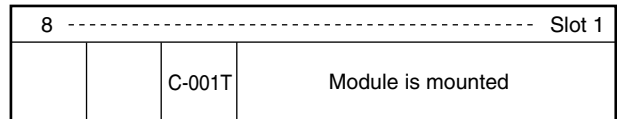
Step 6. Attach the blank panels supplied with the unit onto open slots.

Note
If modules are not correctly installed, an error indication is displayed on the VFD screen when the power is turned on. In such cases, check the above procedures again and reinsert the modules.

(Example for an error indication)

```
MODULE SLOT2 ERROR
```
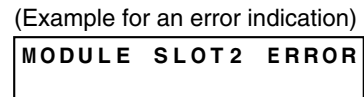
14.4. Module Installation Examples

[Example of audio 8-input/8-output and control 12-input/12-output configuration]

Slot No.

8	7	6	5	4	3	2	1
C-001T Control 8 inputs 8 outputs	T-001T Audio 2 outputs	T-001T Audio 2 outputs	T-001T Audio 2 outputs	D-001T Audio 2 inputs	D-001T Audio 2 inputs	D-001T Audio 2 inputs	D-001T Audio 2 inputs

[Example of audio 6-input/4-output and control 4-input/4-output configuration]

8	7	6	5	4	3	2	1
Open slot (Attach the blank panel)	Open slot (Attach the blank panel)	900 series module Audio 1 input	T-001T Audio 2 outputs	900 series module Audio 1 input	900 series module Audio 1 input	900 series module Audio 1 input	D-001T Audio 2 inputs

[Example of audio 3-input/4-output and control 4-input/4-output configuration]

| 8	7	6	5	4	3	2	1
Open slot (Attach the blank panel)	Open slot (Attach the blank panel)	Open slot (Attach the blank panel)	T-001T Audio 2 outputs	Open slot (Attach the blank panel)	900 series module Audio 1 input	900 series module Audio 1 input	ZP-001T Audio 1 input

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15. CONNECTIONS

15.1. Control I/O Terminal Connections

Control-I/O connection terminal

15.1.1. Remote volumes 1, 2

Volume of the input or output channels can be remotely adjusted. (The REMT VOL 1 terminal is factory-preset to output 1, and the REMT VOL 2 to output 2.)
Connect a 10 kΩ (linear taper) variable resistor as shown below or input the DC voltage of 0 to +10 V.
The larger the variable resistor resistance, the larger the volume, and the smaller its resistance, the smaller the volume.

15.1.2. Control inputs 1 – 4

Connect switch contacts, etc. to these terminals.
Open voltage is 3.3 V, and the short-circuit current is 1 mA or less.

15.1.3. Control outputs 1 – 4

Use these terminals to activate LEDs, relays, and other external equipment.
Maximum operating current is 50 mA, and the maximum applicable voltage is +27 V.

15.1.4. Operation by control input

[Pulse trigger]

Use this method to activate operations for which no definite end can be defined, such as Volume Up/Down, BGM and Base pattern activation, and BGM End. Minimum pulse width is 100 ms.

State changes at the falling edge, and is maintained until changed by another trigger.

BGM broadcast in progress
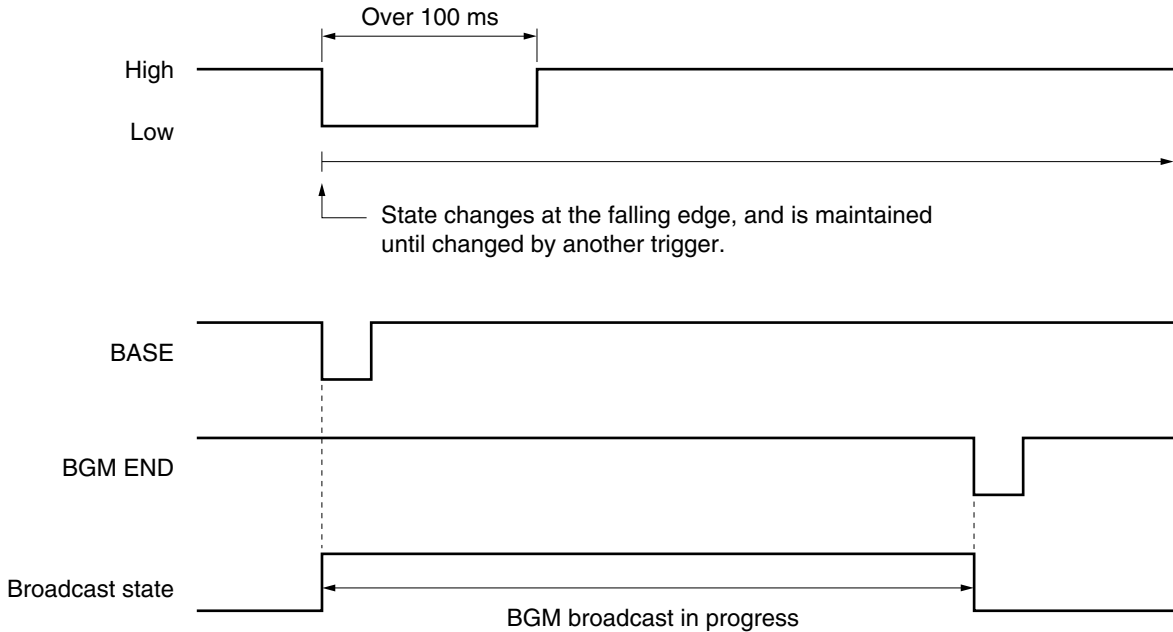
[Level trigger]

Use this method to activate "MUTE," "POWER" (Power ON/OFF remote function), "EMG-MUTE" (Cut-off by emergency control), interrupt broadcasts, and other operations of which start and end must be defined.
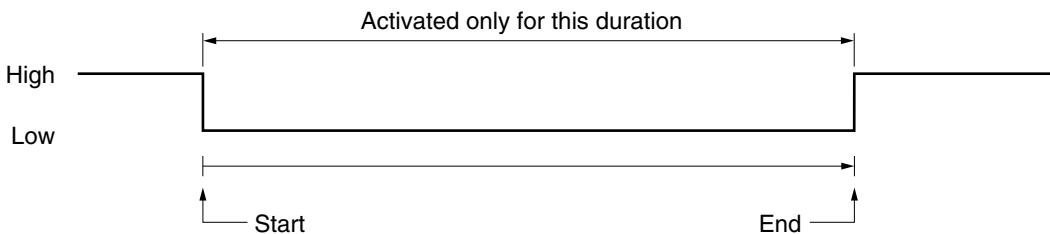
For "MUTE," "POWER," and "EMG-MUTE" functions, if operated at the front panel (EMG-MUTE does not accept this access from the front panel) or if other control input to which the same function is assigned is fed, their states are changed by subsequent panel operations or control input activations. The following example shows the change in operation when POWER (Power ON/OFF remote function) is assigned to Control inputs 1 and 2;
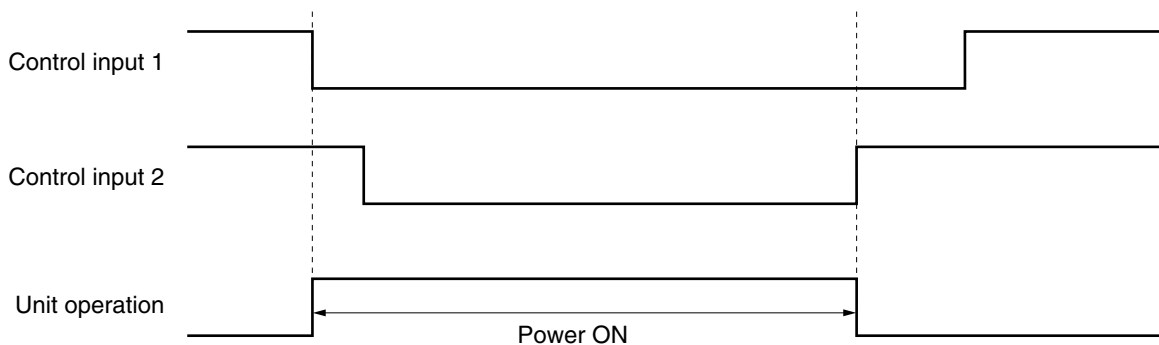
Control input 1 will still keep the power ON after Control input 2 turns the power OFF, however the unit's power is OFF.

15.2. C-001T Module Connections

15.2.1. Control input terminal

(Open voltage: 3.3 V, Max. 1 mA)

Contact closures

Open collectors, etc.
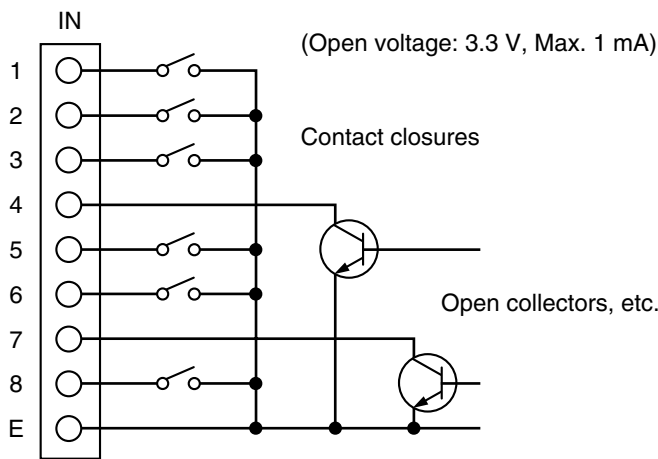
For operation by means of the control inputs, refer to the previous page.

15.2.2. Control output terminal

LEDs, Relays, etc. (Max. 50 mA)

Applicable DC voltage
Max. 27 V DC
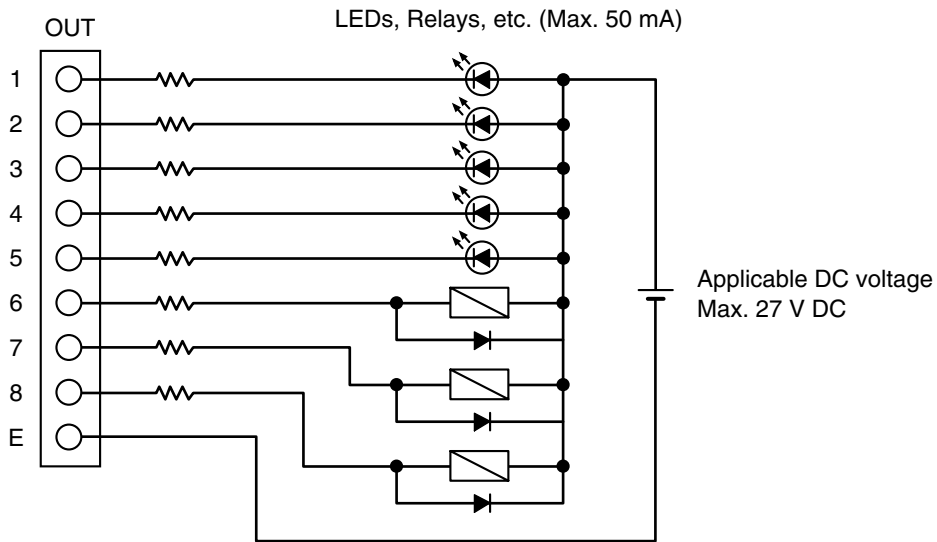
15.3. RS-232C Connector Connection

Use the straight cable when connecting a PC to the unit's RS-232C connector (9P, female).

9000 Series amplifier
RS-232C connection
(Female)

PC
(Male)

Straight cable

TXD
RXD
GND

RXD
TXD
GND
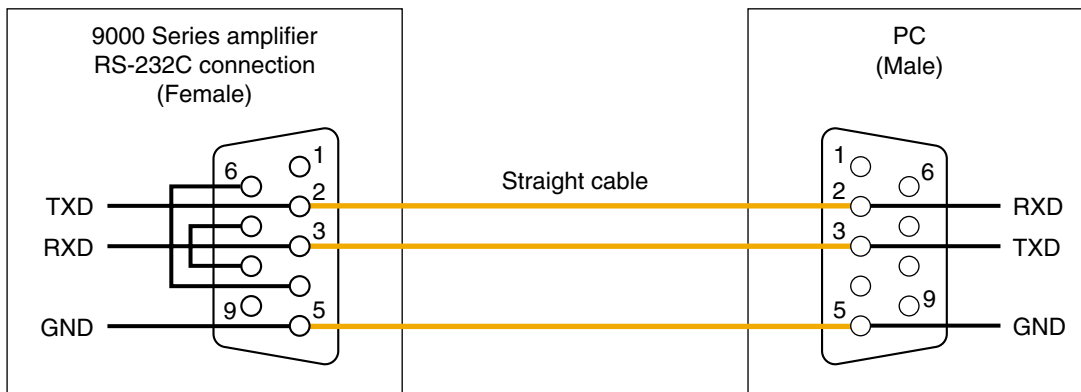
15.4. Removable Terminal Plug Connection

Be sure to use the supplied removable terminal plugs for connections to the removable terminal blocks.

Cautions
• Be sure to use shielded cables for audio signal lines.
• Avoid soldering stranded or shielded cable, as contact resistance may increase when the cable is tightened and the solder is crushed, possibly resulting in an excessive rise in joint temperatures.

Cable end treatment

Solid or stranded cable   Shielded cable

7 mm   7 mm

20 mm
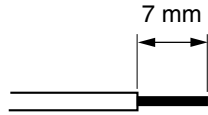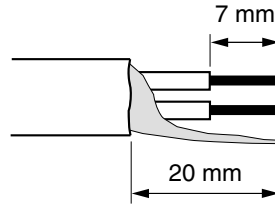
Connector connection

Slotted screwdriver

Step 1. Loosen the terminal screw, then insert the cable.

2   *1*
Tightens   Loosens

Terminal screw

Step 2. Retighten the terminal screw. (Pull on the cable to ensure it is securely connected.)

1

Shielded cable

Removable terminal plug (accessory)
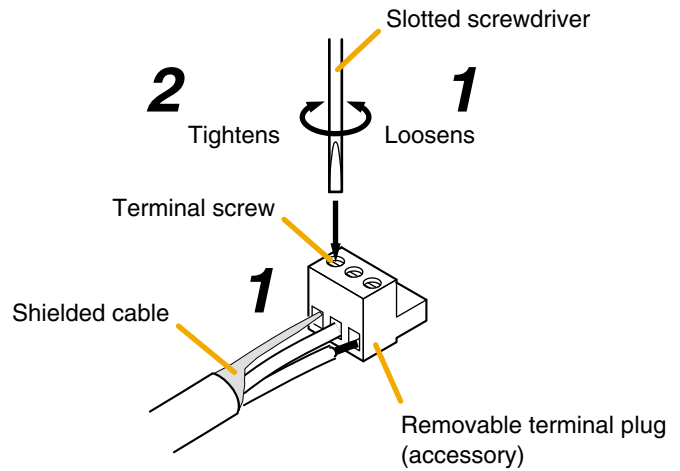
Tip
Recommended slotted screwdriver type: Screwdriver with 3 mm blade width

Bit shape   3 mm
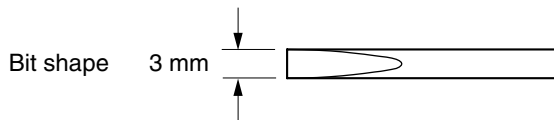
16. RACK MOUNTING BRACKET ATTACHMENT

Use the supplied rack mounting bracket when mounting the unit in an equipment rack.

Step 1. Remove four M4 x 8 screws on the sides.
The removed screws are no longer used.

Step 2. Attach the rack mounting bracket to the unit using the supplied four M4 x 16 rack mounting bracket mounting screws.

Rack mounting bracket screw M4 x 16 (supplied)

Rack mounting bracket
(supplied)

Screws removed in Step 1 are no longer used.
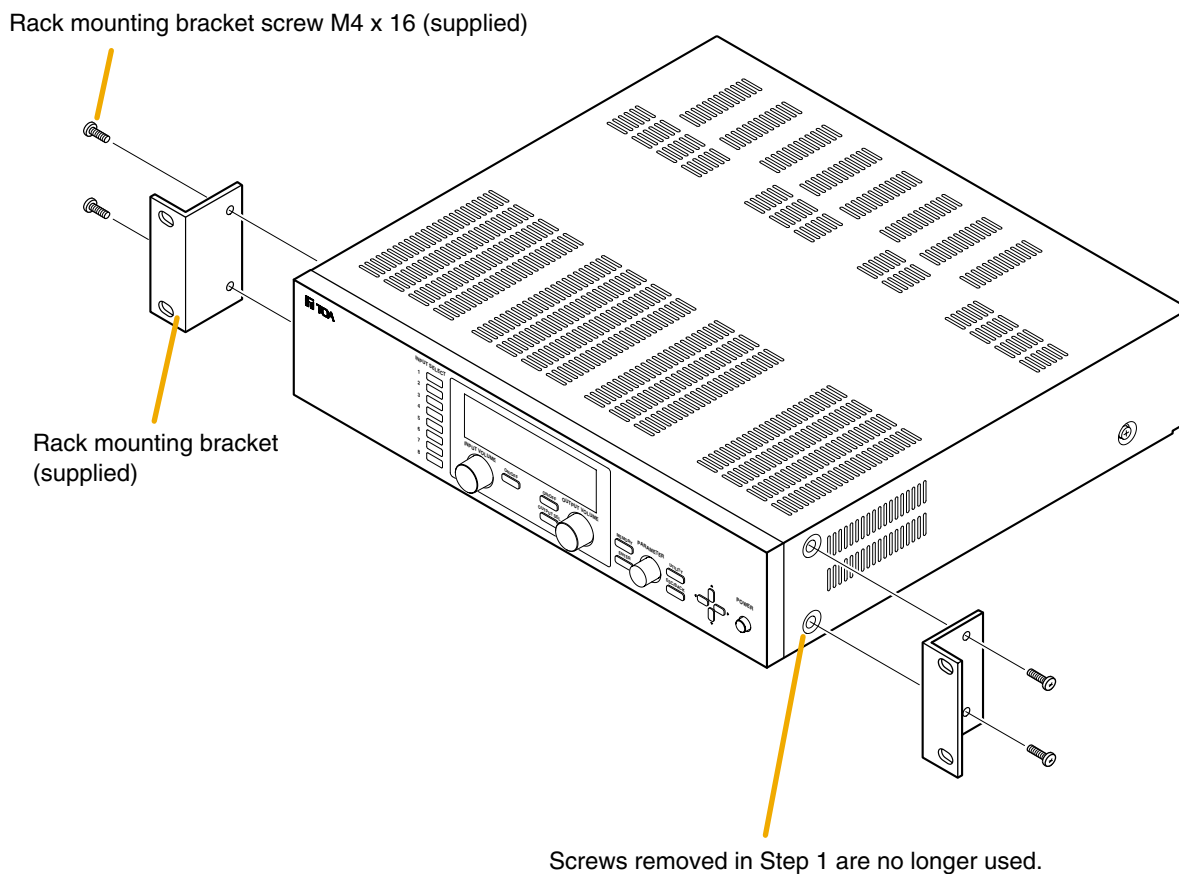
Notes
- Remove 4 plastic feet on the bottom surface when mounting the unit in a rack.
- Rack mounting screws are not supplied with the unit. Use the screws that are appropriate for the rack.

17. HOW TO USE THE SUPPLIED SOFTWARE

17.1. General Description

The supplied CD-ROM contains the A-9000 series maintenance software, which executes the following utility programs.

Updating firmware		Updates the firmware.
Parameter file	9000 to PC	Stores parameters set at the unit to your PC.
	PC to 9000	Transfers parameters stored in your PC to the unit.
Others*	Status Monitor	Monitors the unit's operation status.
	Virtual control I/O	Activates the control input.
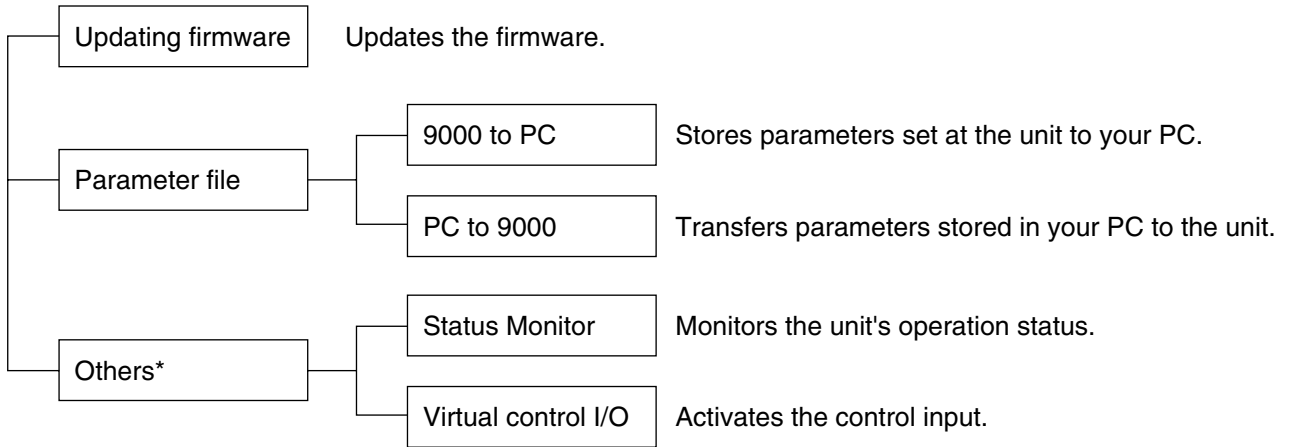
* Used to check the unit at installation.

[System requirements]

Ensure your PC operates on Windows XP and also meets the following requirements, or this software will not run properly.

Serial port: RS-232C port or compatible with USB-to-RS232C converter
Media & Drive: CD-ROM

Note: Windows is a trademark of Microsoft Corporation.

17.2. Installing the Software

Step 1. Load the supplied CD-ROM into the PC's CD-ROM drive.

Step 2. Double-click the "setup_a9k.exe" icon in the software folder.

Step 3. Designate the folder into which the 9000 series maintenance software is extracted, and click the "OK" button.

> **Note**
> After installation completion, only the software icon is created in the folder designated in the screen at right. The software execution file is moved into the automatically created C:/ProgramFiles/TOA folder after being extracted.
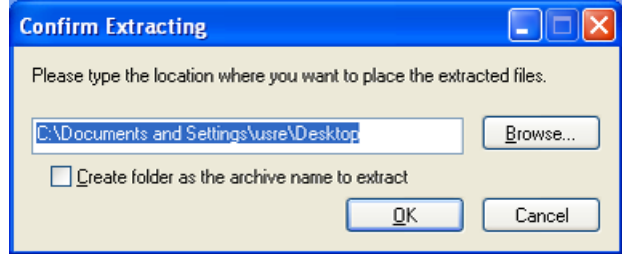
Step 4. After installation completion, confirm the "MaintCtrl.exe" icon is created in the folder designated in Step 3.

17.3. Connecting the Unit to the PC

Connect the unit's RS-232C port and the PC's RS-232C port with a 9-pin straight cable (male - female).

9-pin straight cable (male – female)
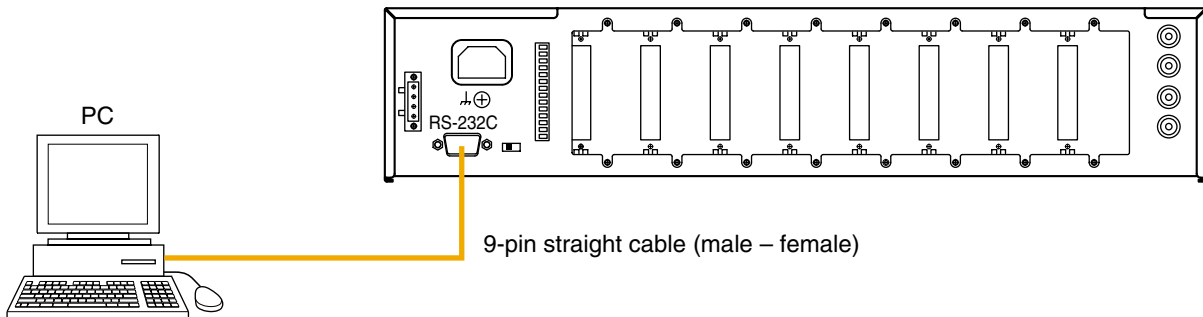
17.4. Setting the Communication Port and Speed

Set the PC's communication port and speed according to the procedure below.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series
maintenance software.
The screen at right is displayed.
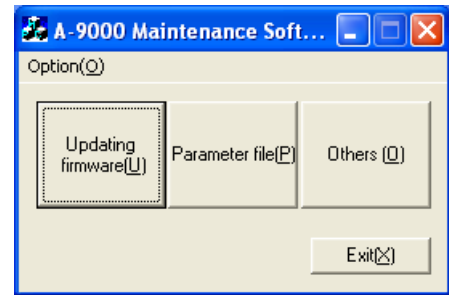
**Step 2.** Pull down the menu from the "Option" button and select
"Communication Setting."
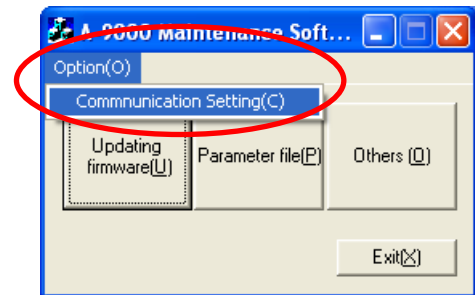
The screen at right is displayed.
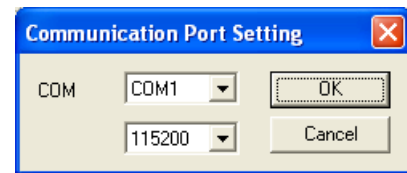
Step 3. Select the communication port and speed to match the connected PC.
Then, click the "OK" button.
The COM port is factory-preset to "COM1" and the communication speed to "57600."

17.5. Updating the Firmware

Our latest A-9000 firmware is made available on our product information download site (http://www.toa-products.com/international/). You can also obtain the latest version by downloading it.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.
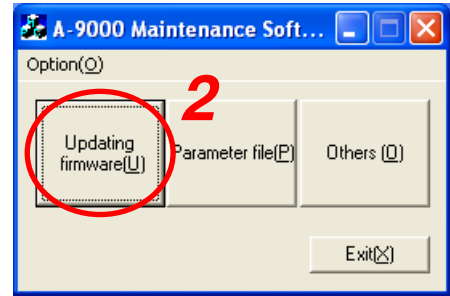
Step 2. Click the "Updating firmware" button.
The window at right opens.
The communication status is displayed in the "Message" box.

Tip
You can also set the communication port here when pressing the "Option" button on the menu bar to select "Communication Setting."
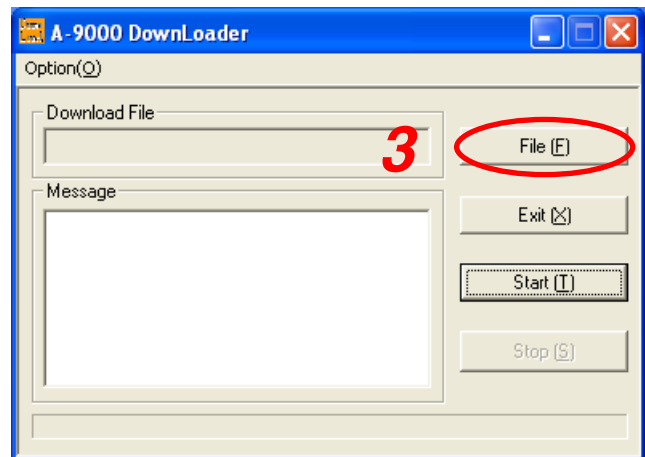
Step 3. Click the "File" button.
The window at right opens.
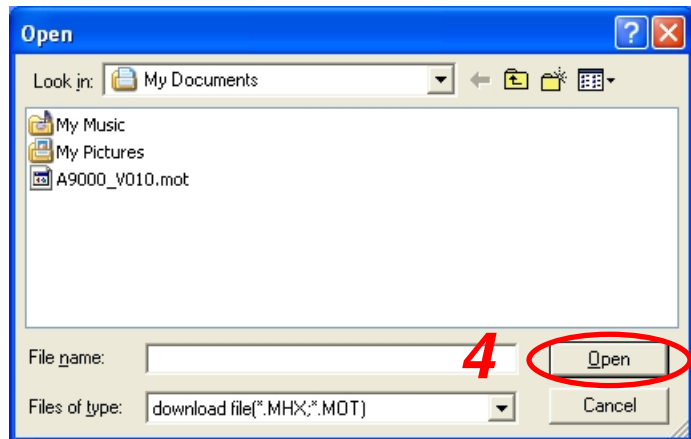
Step 4. Select the file, then click the "Open" button.
The selected download file is entered in the "Download File" box.

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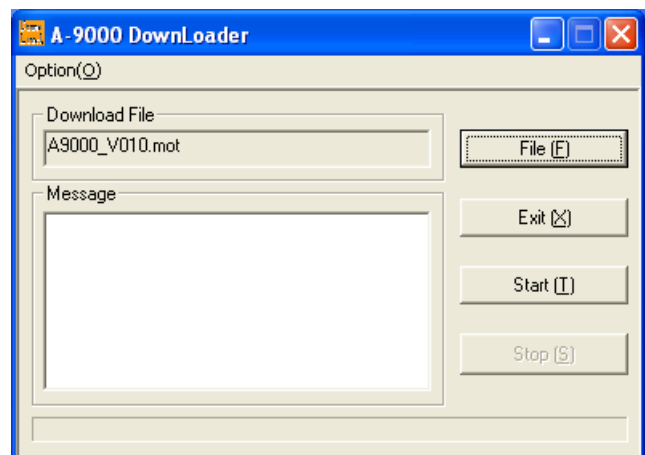
Step 5. Perform the following key operations at the unit to make the unit ready for data reception from the PC.

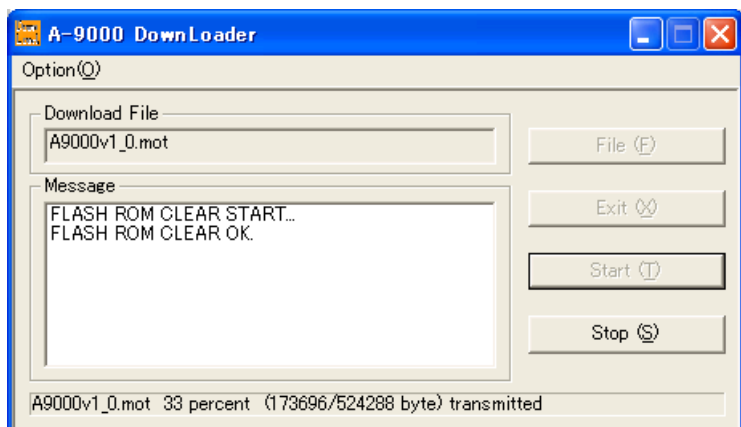   **5-1.** Turn the power switch off.

    5-2. Press the Input channel 8 selection key, Escape/Back key, and Power switch at the same time.
          The unit is placed in standby mode for communications with the PC.

Input channel 8 selection key   Escape/Back key   Power switch
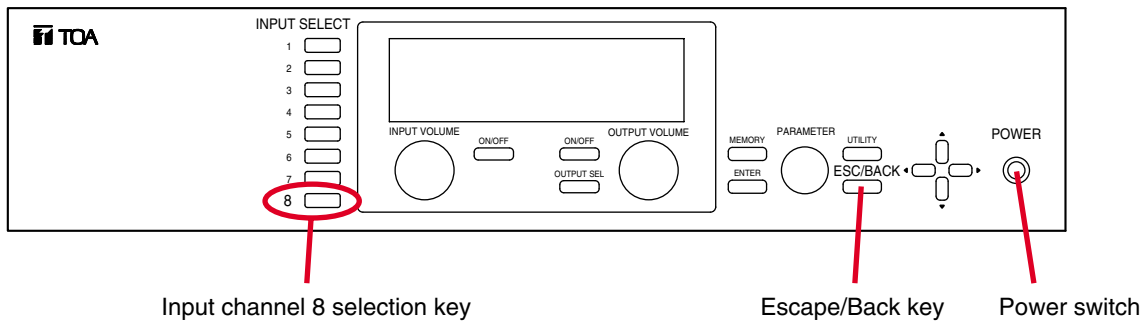
Step 6. Click the "Start" button to start the firmware file transfer.
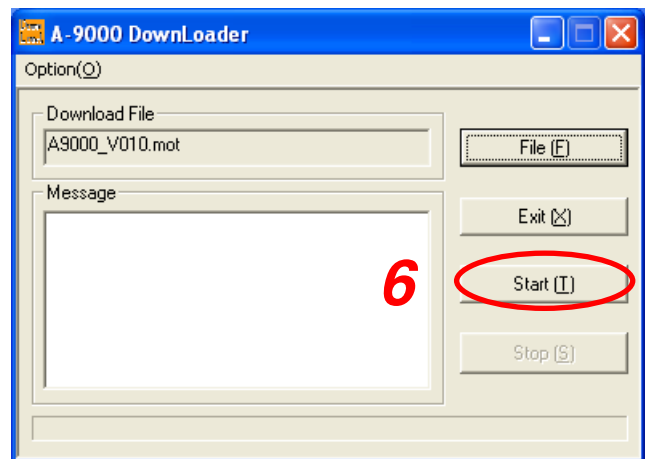
The window at right opens.

Step 7. Click the "Exit" button to terminate the program after download completion.
         The screen returns to the initial menu screen in Step 1.

17.6. Storing or Recalling Parameters Set at the Unit

You can back up the parameters set at the unit to your PC, or transfer the parameters stored in your PC to the unit.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
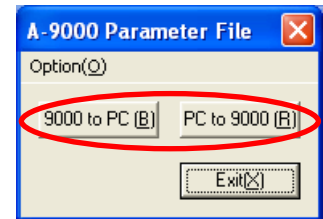The screen at right is displayed.
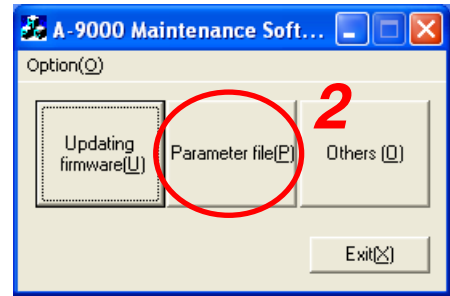
Step 2. Click the "Parameter file" button.
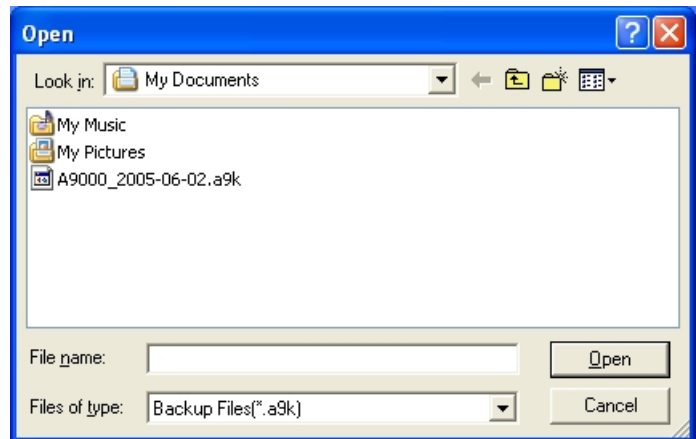The window at right opens.

   Tip
   You can also set the communication port and speed here when pressing the "Option" button on the menu bar to select "Communication Setting."


Step 3. Click the "9000 to PC" button when storing parameters set at the unit to your PC, while click the "PC to 9000" button to transfer parameters stored in your PC to the unit.
The window at right opens.

Step 4. Perform the following key operations at the unit to permit data transmission/reception between the unit and the PC.

   4-1. Turn the power switch off.

   4-2. Press the Input channel 8 selection key, Enter key, and Power switch at the same time.
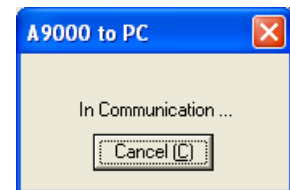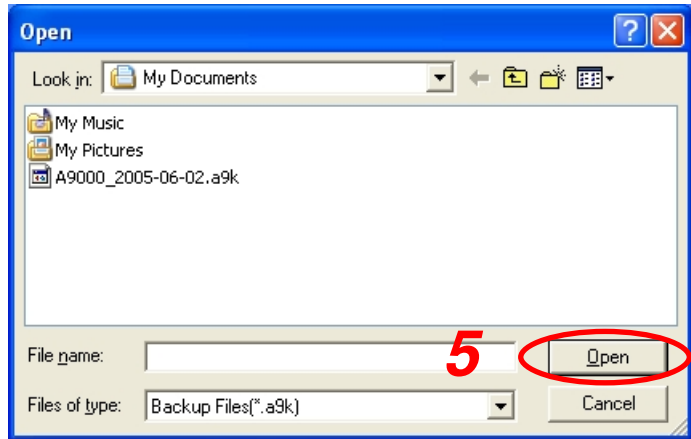   The unit is placed in standby mode for communications with the PC.
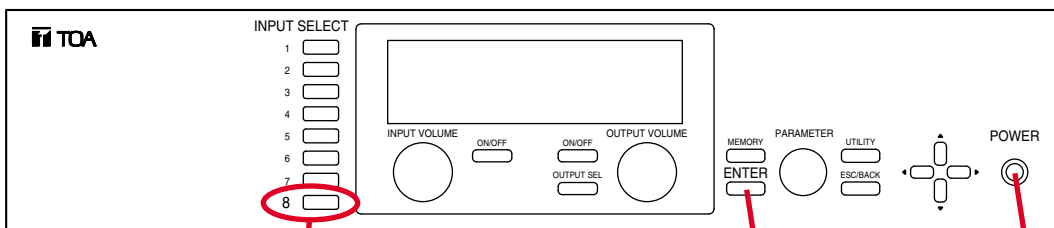
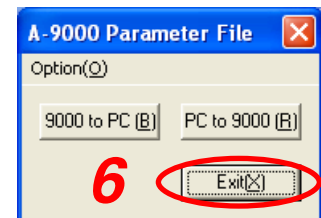Input channel 8 selection key   Enter key   Power switch

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Step 5. Select the file, then click the "Open" button.
The set parameters are transferred from the unit to the PC or from the PC to the unit.

Step 6. Click the "Exit" button to terminate the program after data transmission completion.
The screen returns to the initial menu screen in Step 1.

17.7. Monitoring the Unit's Operation Status

The operation status of the unit can be monitored in real time.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
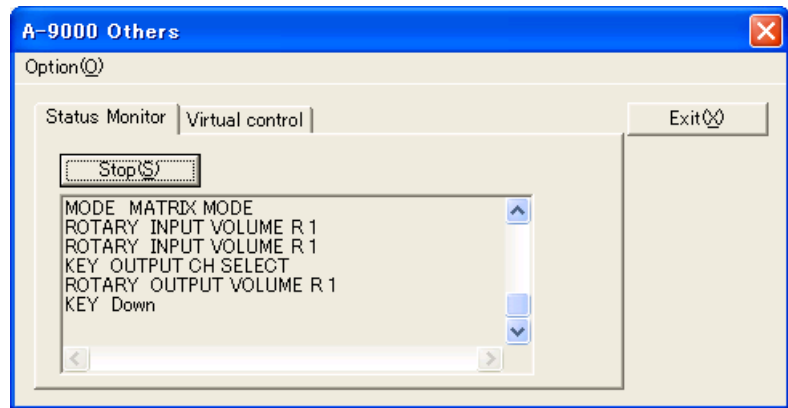The screen at right is displayed.
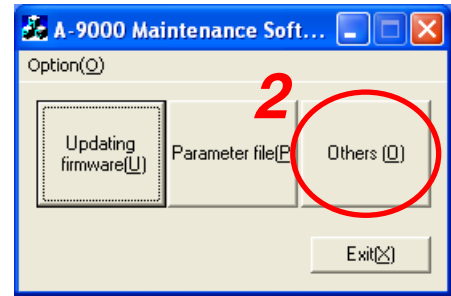
Step 2. Click the "Others" button.
The window at right opens.

Tip
You can also set the communication port and speed here when pressing the "Option" button on the menu bar to select "Communication Setting."
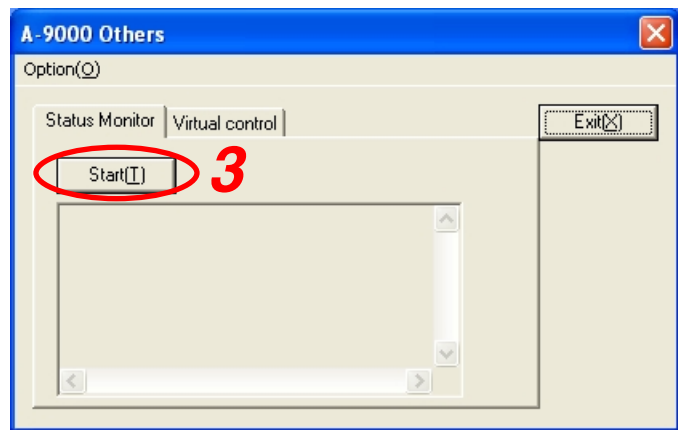
Step 3. Click the "Start" button.
Operation status such as the unit's key or knob actions is displayed in real time.

[Screen indications and their descriptions]

Indication	Description
KEY INPUT SELECT 1	INPUT SELECT 1 key has been pressed.
KEY POWER long	Power switch has been pressed long.
KEY UTILITY & ESC/BACK	UTILITY key and ESC/BACK key have been pressed at the same time.
ROTARY INPUT VOLUME L 1	INPUT VOLUME control has been turned one click counterclockwise.
CIN CONTROL INPUT 2 (ON)	Control input 2 terminal has been turned on.
MATRIX MODE	Unit is operating in matrix mode.
MIXER MODE	Unit is operating in mixer mode.
POWER ON	Power has been turned on.

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Step 4. To stop monitoring, click the "Stop" button.

Step 5. Click the "Exit" button to terminate the program.
The screen returns to the initial menu screen in Step 1.

A-9000 Others

Option(O)

Status Monitor | Virtual control |

5 Exit(X)

Stop(S) **4**

MODE MATRIX MODE
ROTARY INPUT VOLUME R 1
ROTARY INPUT VOLUME R 1
KEY OUTPUT CH SELECT
ROTARY OUTPUT VOLUME R 1
KEY Down
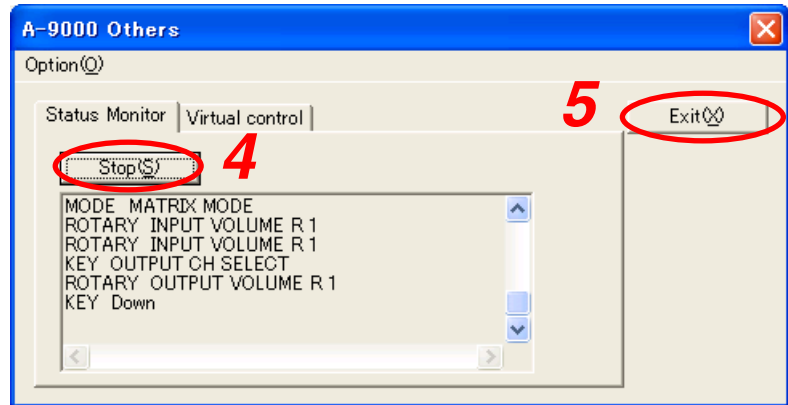
17.8. Activating the Control Input

You can simulate the unit's control input activation through PC operation.

Step 1. Double-click the "MaintCtrl.exe" icon to run the 9000 series maintenance software.
The screen at right is displayed.

Step 2. Click the "Others" button.
The window at right opens.
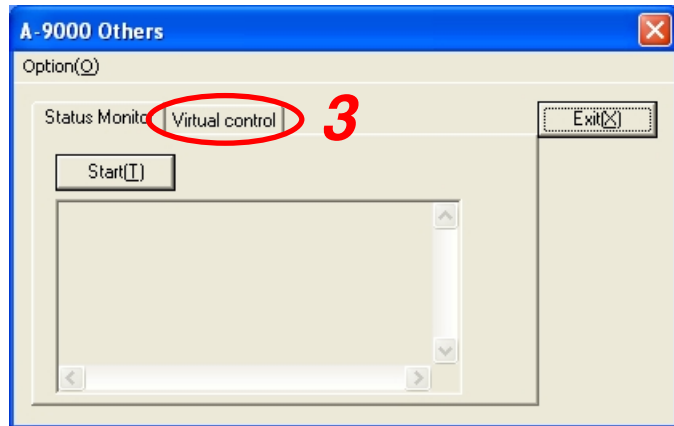
Step 3. Click the "Virtual control" tab.
The window at right opens.
Terminal 1 – 12 represent the control input terminal numbers.
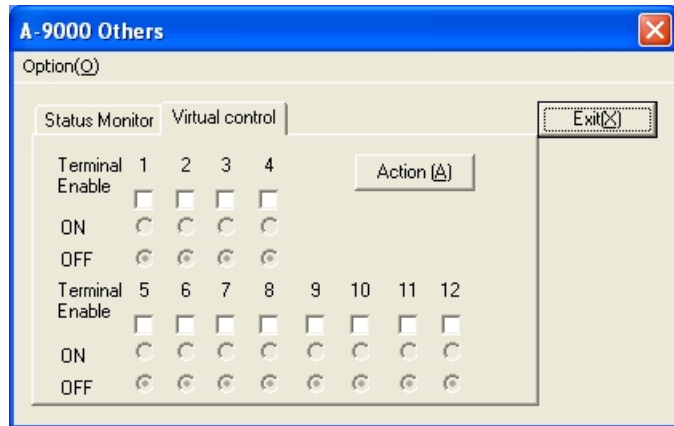
Step 4. Tick the "Enable" boxes of the control inputs you want to activate, then select either ON or OFF.

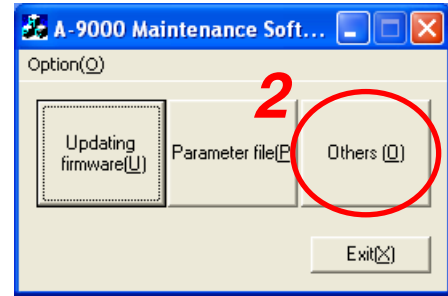**Step 5.** Click the "Action" button.
The Control inputs set to ON are activated.

Step 6. Click the "Exit" button to terminate the program.
The screen returns to the initial menu screen in Step 1.
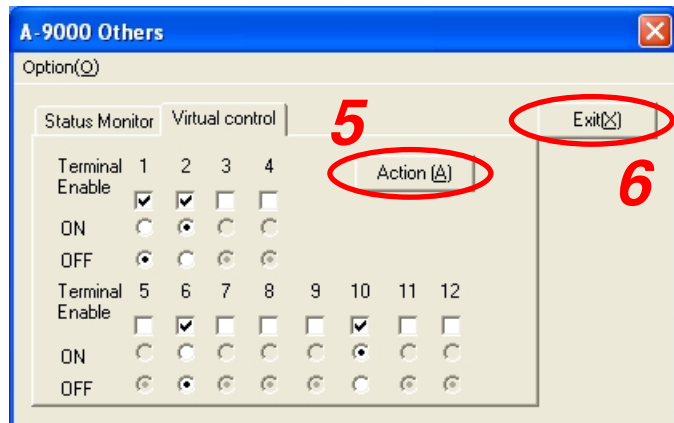
# 18. ERROR INDICATIONS

Error indications	Possible cause and Remedy
MODULE SLOT#No. ERROR	A module is inserted into a wrong slot. Check to confirm that each module is inserted into a correct slot, and correctly reinsert the module inserted into the wrong slot. (Refer to p. 66.)
DC PROTECT (OUTPUT #No.)	There may be overload or excessive signal input. Check input and output signal levels and gain settings, then adjust them as necessary. If the indicator remains lit, consult your TOA dealer.
ERASE MIXER MEMO?	The unit's Mode switch was shifted from the Mixer mode to the Matrix mode while the AC power supply was shut off. Press the Enter key to erase the data set in the Mixer mode inside the unit.
ERASE MATRIX MEMO?	The unit's Mode switch was shifted from the Matrix mode to the Mixer mode while the AC power supply was shut off. Press the Enter key to erase the data set in the Matrix mode inside the unit.
INITIALIZE MEMORY?	Module-to-Slot configuration was changed or a module was damaged. Press the Enter key to initialize the memory to default settings. Or press the Escape/Back key to display "MODULE SLOT#No ERROR", then check the error slot. Reinsert the correct module into the slot.
The Fault indicator lights.	A communication error between the unit and module occurred. Disconnect the AC power supply, then reconnect it. If the indicator remains lit, this may indicate a unit failure. Consult your TOA dealer.

19. TROUBLESHOOTING

Symptom	Possible Cause	Remedy
Noise generated.	Module mounting screw not securely tightened.	If this screw is loose, noise may be produced. Ensure that the screw is tightened.
Excessive noise.	Incorrect module input sensitivity setting.	The unit is designed to digitize audio signals with an AD converter and vary the input level with a digital volume control. Therefore, noise increases if the input or output volume control is set to a level higher than 0 dB while the AD converter input is kept low.
Sound distorted.	Incorrect module input sensitivity setting.	The unit is designed to digitize audio signals with an AD converter and vary the input level with a digital volume control. Therefore, when an extremely large input is fed into the AD converter, the voice remains distorted even if the volume is decreased.
Phantom power not supplied.	D-001T module mounting screw not securely tightened.	If this screw is loose, phantom power is not supplied. Ensure that the module mounting screw is tightened.
Phantom power not supplied.	Phantom power set to OFF in D-001T module input setting.	If phantom power is set to OFF in D-001T module input setting, phantom power is not supplied. Set phantom power to ON in the setting.
Condenser microphone does not operate correctly.	Condenser microphone of the type powered by over +24 V is used.	The D-001T module's phantom power supplies +24 V. If using a condenser microphone powered by over +24 V, separately prepare phantom power supply equipment recommended by the equipment manufacturer.

20. BLOCK DIAGRAM

Remarks

Each pair of Inputs 1 and 8, 2 and 7, 3 and 6, and 4 and 5 is the analog inputs of ADC (Analog-Digital Converter).

So, when a digital input module such as the D-001T is inserted into Slot 1, for example, the digital input selector DIS1 is switched over to the DIGITAL position, thereby disabling the use of analog Inputs 1 and 8.

Consequently, Slot 8's analog input (AIN) cannot be used.

Likewise, when Slot 2 is occupied by the D-001T, Slot 7's analog input cannot be used; and when Slot 3 is occupied, Slot 6's analog input cannot be used.

22. LEVEL DIAGRAM

23. SPECIFICATIONS

23.1. M-9000

Power Source	120 V AC, 60 Hz
Power Consumption	40 W
Audio Input	Max. 8 channels, modular construction (modules optional)
Audio Output	Preamplifier output 1, 2: 0 dB[*1], 600 Ω, balanced, removable terminal block (3 pins)
Module Slot	Analog input (slot 1 – 8): −10 dB[*1], 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): −14 dB[*1], 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, −24 V, +6 V DC
Digital Audio Signal Reference Level	−20 dB FS
Frequency Response	20 – 20,000 Hz, +1, −3 dB
Total Harmonic Distortion	0.008% (at 22 kHz LPF, 1 kHz, +10 dB[*1] output)

S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting
	        Output volume min.: 90 dB
	        Output volume max.: 61 dB (input 1 volume: 0 dB, other inputs: OFF)

Cross Talk	Over 64 dB (at 20 kHz)
Tone Control	Bass: ±12 dB (at 100 Hz), Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
Speaker Equalizer	15 (compatible with TOA speakers only)
High-pass Filter	−12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	−12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only
Scene/Event Memory	32
Operation Mode	Matrix mode/Mixer mode (selector switch)
Auxiliary Function	Key lock function

Control Input/Output	RS-232C[*2], D-sub connector (9P, female)
	Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC,
	                            short-circuit current: under 1 mA, removable terminal block
	Control output: 4 outputs, open collector output, withstand voltage: 27 V DC,
	                            control current: 50 mA, removable terminal block
	Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or
	                            input the DC voltage of 0 to +10 V, removable terminal block

Operating Temperature	−10 to +40°C
Operating Humidity	35% to 80% RH (no condensation)
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint
Dimensions	420 (w) x 107.6 (h) x 353 (d) mm
Weight	6 kg

[*1] 0 dB = 1 V
[*2] Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

Notes
• The design and specifications are subject to change without notice for improvement.
• AMX is a trademark of AMX Corporation.
• Crestron is a trademark of Crestron Electronics, Inc.

• Accessories

Power cord (2 m)	1	Removable terminal plug (3 pins)	2
Rack mounting bracket	2	Removable terminal plug (14 pins)	1
Rack mounting screw (M4 x 16)	4	CD-ROM	1
Blank panel	7	Start guide	1
Blank panel mounting screw (M3 x 8)	14		

23.2. A-9060DH, A-9120DH

Model No.	A-9060DH	A-9120DH
Power Source	120 V AC, 60 Hz	
Power Consumption	150 W	250 W
Audio Input	Max. 8 channels, modular construction (modules optional) Power amplifier input 1, 2: 0 dB*1, 10 kΩ, RCA pin jack	
Audio Output		
Preamplifier Output 1, 2	0 dB*1, 300 Ω, unbalanced, RCA pin jack	
Speaker Output 1, 2	60 W, 83 Ω x 2, BLT output, removable terminal block (4 pins)	120 W, 41 Ω x 2, BLT output, removable terminal block (4 pins)
Module Slot	Analog input (slot 1 – 8): −10 dB*1, 10 kΩ, unbalanced Digital input (slot 1 – 4): 24 bit/48 kHz MIX output (slot 1 – 8): −14 dB*1, 330 Ω (CH1 prefader output), unbalanced Digital output (slot 5 – 7): 24 bit/48 kHz Power supply (slot 1 – 8): +24 V, −24 V, +6 V DC	
Digital Audio Signal Reference Level	−20 dB FS	
Power Bandwidth	20 – 20,000 Hz, 0.008% THD	
Frequency Response	Power amplifier section: 20 – 20,000 Hz, +0, −1 dB Analog input module to speaker output: 20 – 20,000 Hz, +1, −3 dB	
Total Harmonic Distortion	Power amplifier section: 0.0008% (22 kHz LPF, 1 kHz, rated power) Analog input module to speaker output: 0.008% (22 kHz LPF, 1 kHz, rated power)	
S/N Ratio	At Input short, 20 – 20,000 Hz, ALL FLAT or OFF setting Output volume min.: 90 dB (preamplifier output) Output volume max.: 61 dB (preamplifier output, input 1 volume: 0 dB, other inputs: OFF) Power amplifier section: 110 dB	
Cross Talk	Over 64 dB (at 20 kHz)	
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)	
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5	
Speaker Equalizer	15 (compatible with TOA speakers only)	
High-pass Filter	−12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps	
Low-pass Filter	−12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps	
Compressor	Depth: 1 – 5	
Delay	0 – 40 ms (1 ms steps), maximum 40 ms (CH1 + CH2), mixer mode only	
Scene/Event Memory	32	
Operation Mode	Matrix mode/Mixer mode (selector switch)	
Auxiliary Function	Key lock function	
Control Input/Output	RS-232C*2, D-sub connector (9P, female) Control input: 4 inputs, no-voltage make contact input, open voltage: 3.3 V DC, short-circuit current: under 1 mA, removable terminal block Control output: 4 outputs, open collector output, withstand voltage: 27 V DC, control current: 50 mA, removable terminal block Remote volume: 2 channels, connect a 10 kΩ/linear taper variable resister or input the DC voltage of 0 to +10 V, removable terminal block	
Operating Temperature	−10 to +40°C	
Operating Humidity	35% to 80% RH (no condensation)	
Finish	Panel: Aluminum, hair-line, black Case: Surface-treated steel plate, black, paint	
Dimensions	420 (w) x 107.6 (h) x 395 (d) mm	
Weight	9 kg	11 kg

*1 0 dB = 1 V

*2 Allowing it to be controlled by a control system such as AMX and Crestron through RS-232C port.

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Notes
• The design and specifications are subject to change without notice for improvement.
• AMX is a trademark of AMX Corporation.
• Crestron is a trademark of Crestron Electronics, Inc.

• **Accessories**

Power cord (2 m) 1
Rack mounting bracket 2
Rack mounting screw (M4 x 16) 4
Blank panel 7
Blank panel mounting screw (M3 x 8) 14

Removable terminal plug (4 pins) 1
Removable terminal plug (14 pins) 1
CD-ROM 1
Start guide 1

23.3. Optional Modules

23.3.1. D-001T

Power Source	+24 V DC, –24 V DC, +6 V DC
Current Consumption	20 mA (at +24 V DC), 20 mA (at –24 V DC), 60 mA (at +6 V DC)
Input	2 channels, 3 kΩ (when the phantom power is ON) / 10 kΩ (phantom power is OFF), electronically-balanced, removable terminal block (3 pins)
Input Sensitivity	–60, –54, –48, –42, –36, –30, –24, –18, –10 dB* (selectable)
Frequency Response	20 – 20,000 Hz +1, –3 dB
Total Harmonic Distortion + N	0.008% (at 1 kHz, 20 – 20,000 Hz BPF, Input sensitivity: –10 dB)
Input Equivalent Noise	Under –112 dB (at 20 – 20,000 Hz BPF, Input short, Input sensitivity: –60 dB)
S/N Ratio	Over 73 dB (at 20 – 20,000 Hz BPF, Input short, Input sensitivity: –10 dB)
Cross Talk	Over 75 dB (at 20 kHz, Input sensitivity: –10 dB)
CMRR	Over 62 dB (at 1 kHz, Input sensitivity: –60 dB)
A/D Converter	24 bit $\Delta\Sigma$ADC
Sampling Frequency	48 kHz
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Phantom Power	+24 V DC
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	82 g

* 0 dB = 1 V

Note: The design and specifications are subject to change without notice for improvement.

• **Accessories**

Removable terminal plug (3 pins) 2
Module mounting screw 2

23.3.2. T-001T

Power Source	+24 V DC, –24 V DC, +6 V DC
Current Consumption	35 mA (at +24 V DC), 35 mA (at –24 V DC), 60 mA (at +6 V DC)
Output	2 channels, max. +20 dB* (at 10 kΩ load), 600 Ω, electronically-balanced, removable terminal block (3 pins)
Frequency Response	20 – 20,000 Hz +1, –3 dB
Total Harmonic Distortion + N	0.005% (at 1 kHz, 20 – 20,000 Hz BPF, 5 V output, 10 kΩ load)
S/N Ratio	Over 73 dB (at 20 – 20,000 Hz BPF)
Residual Noise	Under –91 dB (at 20 – 20,000 Hz BPF, VOL: –70 dB)
Cross Talk	Over 87 dB (at 20 kHz)
D/A Converter	24 bit $\Delta\Sigma$DAC
Sampling Frequency	48 kHz
Tone Control	Bass: ±12 dB (at 100 Hz) Treble: ±12 dB (at 10 kHz)
Parametric Equalizer	10 bands, Frequency: 20 – 20,000 Hz, 31 steps, Variable range: ±12 dB, Q: 0.3 – 5
Speaker Equalizer	15 (compatible with TOA speakers only)
High-pass Filter	–12 dB/oct, Variable frequency range: 20 – 400 Hz, 14 steps
Low-pass Filter	–12 dB/oct, Variable frequency range: 4,000 – 20,000 Hz, 8 steps
Compressor	Depth: 1 – 5
Delay	0 – 40 ms (1 ms step), maximum 40 ms (CH1 + CH2), mixer mode only
Operating Temperature	–10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	82 g

* 0 dB = 1 V

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (3 pins) 2
Module mounting screw 2

23.3.3. C-001T

Power Source	6 V DC
Current Consumption	15 mA
Control Input	8 channels, open voltage: 3.3 V DC, short-circuit: under 1 mA, removable terminal block (9 pins)
Control Output	8 channels, open collector output, withstand voltage: 27 V DC, control current: max. 50 mA, removable terminal block (9 pins)
Operating Temperature	−10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	62 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (9 pins) 2
Module mounting screw 2

23.3.4. ZP-001T

Power Source	+24 V DC, +6 V DC
Current Consumption	38 mA (at +24 V DC), 18 mA (at +6 V DC)
Number of Lines	1 line
Type of Selectable Signal	DTMF signal
Signaling System	Loop-Start (or Ground-Start, selectable)
TEL Line	0 dB, 600 Ω, balanced, RJ-11 connector/removable terminal block (4 pins)
Control Input	1 channel, no-voltage make contact, open voltage: 5 V DC, short-circuit: 0.5 mA, removable terminal block (4 pins)
Control Output	4 channels, open collector output (isolated), withstand voltage: 35 V DC, control current: max. 50 mA, removable terminal block (4 pins)
Operating Temperature	−10 to +40°C
Finish	Panel: Aluminum, hair-line
Dimensions	35 (w) x 78 (h) x 91.5 (d) mm
Weight	153 g

Note: The design and specifications are subject to change without notice for improvement.

• Accessories

Removable terminal plug (4 pins) 3
Module mounting screw 2